AIWA®

S/M Code No. 84-002
DATA OF ISSUE 2/1984

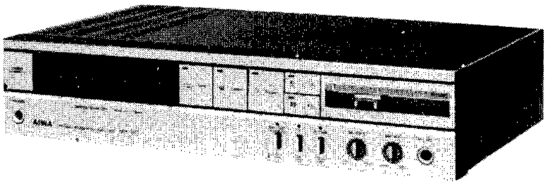
SERVICE MANUAL

TYPE. H,HB,UB,E,EB,K,KB,G

STEREO INTEGRATED AMPLIFIER

MODEL NO.

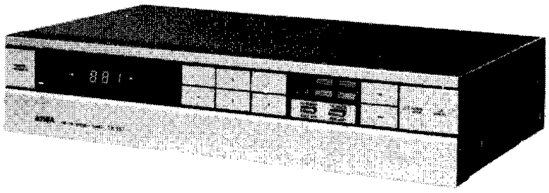
MX-90



FM/AM STEREO TUNER

MODEL NO.

TX-110

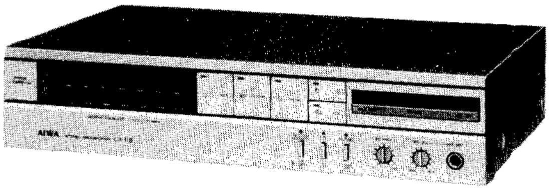


Shown above is TX-70H

STEREO PREAMPLIFIER

MODEL NO.

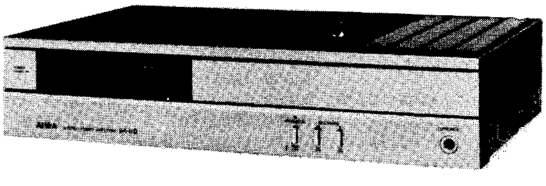
GX-110



DC STEREO POWER AMPLIFIER

MODEL NO.

BX-110



SPECIFICATIONS

MX-90

Power source:	H, HB models AC 120/220/240V switchable, 50/60Hz UB model AC 120V, 60Hz E, EB models AC 220V, 50/60Hz K, KB, G models AC 240V, 50/60Hz
Power consumption:	H, HB models 85W UB model 70W E, EB, K, KB, G models 160W
Dimensions:	330(W)×71(H)×200(D)mm (12-7/8"×2-5/8"×7-7/8")
Weight:	3.6kg (7.92lbs.)

<POWER AMPLIFIER>

Effective output power:	H, HB models 45W+45W(8Ω, EIAJ 5% 1kHz) E, EB, K, KB, G models 30W+30W(8Ω, T. H. D. 0.05%, 40Hz~20kHz) UB model only <FTC Rule> 35 Watts per channel, Min. RMS at 8 ohms, from 40Hz~20kHz, with no more than 0.2% Total Harmonic Distortion
Total harmonic distortion:	Less than 0.08%(1kHz, 30W, 8Ω)
Output bandwidth:	40Hz to 50kHz(Less than0.5%) [Both channels driven, 8Ω]
Frequency response:	40Hz to 50kHz (+0.5/−3dB)
Residual noise	Less than AUX 5mV
Damping factor:	More than 40 (1kHz 8Ω)

<PREAMPLIFIER>

Signal to noise ratio:(Weighted)	PHONO(MM)	More than 82dB
	TUNER, AUX	More than 90dB
	TAPE PLAY	More than 90dB
D. S. L:	60Hz	18dB±3dB
RIAA beviation:	±0.5dB(30Hz~15kHz)	
Channel separation:	More than 40dB	
Input jacks: (Sensitivity/input impedance):	PHONO(MM)	3mV/47kΩ
	TUNER	150mV/47kΩ
	CD	150mV/47kΩ
	AUX	240mV/47kΩ
	TAPE	150mV/47kΩ
	MIC	1mV/5kΩ
Output jacks: (Level/output impedance):	TAPE	150mV/47kΩ
	SPEAKERS	8Ω~16Ω

TX-110

<GENERAL>

Power source:	H, HB models AC 120V/220~240V Switchable, 50/60Hz UB model AC120V, 60Hz E, EB models AC220V, 50/60Hz K, KB, G models AC240V, 50/60Hz
Power consumption:	10W
Dimensions:	330(W)×71(H)×200(D)mm (13"×2-3/4"×7-7/8")
Weight:	1.9kg(4.18lbs.)
Output level:	FM180mV AM150mV

<FM TUNER SECTION>

Frequency ranges:	87.5~108.0MHz
Intermediate frequency:	10.7MHz
IHF sensitivity: (THD3%)	H, HB, UB models 7±3dB(at 87.5, 98.0, 108.0MHz) E, EB, K, KB, G models 7±3dB(at 88.0, 98.0, 108.0MHz)
50dB quieting sensitivity:	Less than 36dB(at 98.0MHz)
Image frequency interference ratio:	More than 45dB(at 98.0MHz)
Intermediate frequency interference ratio:	More than 72dB(at 98.0MHz)
SN ratio: (Weighted)	(MONO) More than 74dB(98.0MHz) (STEREO) More than 66dB(98.0MHz)
Total harmonic distortion: (Input level 60dB)	(MONO) Less than 0.3%(at 98.0MHz) (STEREO) Less than 0.4%(at 98.0MHz)
AM suppression ratio:	More than 50dB(at 98.0MHz)
Muting response:	30±3dB(at 98.0MHz)
Effective selectivity:	More than 70dB(at 400kHz)
Capture ratio:	Less than 3dB(at 98.0MHz)
Frequency response:	30Hz~50kHz(+0.5/−3dB)
Separation:	More than 35dB(at 1kHz)
Auto stop level:	30+5/0dB(at 98.0MHz)
Hi-Blend separation:	13±5dB(at 1kHz, 98.0MHz)

<AM TUNER SECTION>

Frequency ranges:	MW	530~1605kHz
	LW	144~353kHz(E, EB, K, KB models only)
Intermediate frequency:	450kHz	
Sensitivity: (S/N 20dB, bar antenna)	MW	52±3dB (at 603kHz) 50±3dB (at 999, 1404kHz)
	LW	62±3dB (at 144, 200, 353kHz) (E, EB, K, KB models only)
Image frequency interference ratio:	MW	More than 40dB (at 999kHz)
	LW	More than 40dB (at 200kHz)(E, EB, K, KB models only)
Intermediate frequency interference ratio:	MW	More than 40dB (at 999kHz)
Selectivity: (±9kHz)	MW	More than 25dB
Distortion:	MW	Less than 1.0%(at 999kHz)
AGC characteristic:	MW	56±10dB(at 999kHz)
SN ratio:	MW	More than 48dB (100dB input)
Auto stop level:	MW	55±10dB
	LW	58±10dB(E, EB, K, KB models only)
Loop antenna:	H, HB, UB, G models MW	300µV/m
	E, EB, K, KB models MW	400µV/m
	LW	800µV/m

GX-110

Power source:	H, HB models AC 120/220/240V Switchable, 50/60Hz UB model AC 120V, 60Hz E, EB models AC 220V, 50/60Hz K, KB, G models AC 240V, 50/60Hz	
Power consumption	10W	
Dimensions:	330(W)×71(H)×200(D)mm (12-7/8"×2-5/8"×7-7/8")	
Weight:	2.1kg(4.62lbs.)	
S/N ratio: (IHF-A)	PHONO(MM), TUNER, AUX CD, TAPE, INPUT	76±3dB
	MIC	50±3dB
Distortion:	Less than 0.5% (1kHz, 0.75V)	
Frequency response:	35~50,000Hz(+0.5/-3dB)	
RIAA deviation: (1kHz, 0dB)	±0.5dB(30Hz~15kHz, 0dB)	
Muting level:	20±3dB	
DSL response:	18±3dB(50Hz)	
PHONO MAX. allowance input: (1kHz, 0.1%)	100±20mV(REC OUT)	
Graphic EQ. response:	+10±3dB -10±3dB (40Hz, 125Hz, 330Hz, 1kHz, 2.5kHz, 6.3kHz, 15kHz)	
Channel separation: (1kHz)	PHONO, AUX, TUNER	50±2dB
Input sensitivity/impedance:	PHONO(MM)	3mV/47kΩ
	TUNER, CD	180mV/47kΩ
	TAPE	180mV/47kΩ
	AUX	300mV/47kΩ
	MIC	1mV/10kΩ
Output/impedance:	TAPE	150mV/47kΩ
	Headphones	8Ω~16Ω
	Speakers	8Ω~16Ω

<WIRELESS TRANSMITTER SECTION>

Power source:	DC3V(SUM-3 "AA" cells
Current consumption:	Below 50mA(Balanced, during use); 30μA(When not in use)
Dimensions:	63(W)×22(H)×141.5(D)mm (2-1/2"×7/8"×5-1/2")
Weight:	100g(0.22lbs.)
Transmission field:	±45°
Transmission distance:	approx. 6m(20 feet)
Clock frequency:	38kHz±1%

BX-110

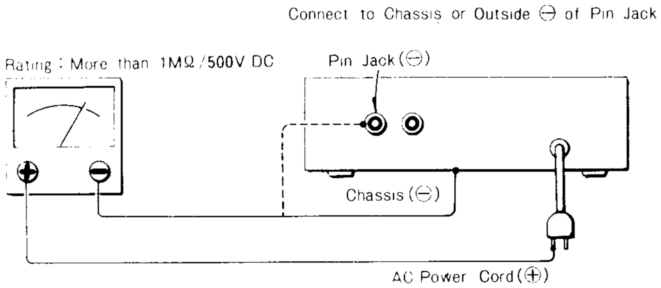
Power source:	H, HB models AC 120/220/240V switchable, 50/60Hz UB model AC 120V, 60Hz E, EB models AC 220V, 50/60Hz K, KB, G models AC 240V, 50/60Hz
Power consumption:	H, HB models 115W UB models 100W E, EB, K, KB, G models 270W
Dimensions:	330(W)×71(H)×200(D)mm (12-7/8"×2-5/8"×7-7/8")
Weight:	4.8kg (10.57lbs.)
Power output:	H, HB, E, EB, K, KB, G models 60W+60W(8Ω, T. H. D. 0.01%, 20Hz~20kHz) <FTC Rule UB model only> 60Watts per channel, Min. RMS at 8Ω, from 20Hz~20kHz, with no more than 0.02% Total Harmonic Distortion.
Distortion:	Less than 0.008%
Intermodulation distortion:	Less than 0.02%(50W, 8Ω)
Damping factor:	More than 30
S/N ratio:	More than 110dB
Frequency response:	10~50,000Hz(-1dB)
Output bandwith:	10~50,000Hz(Less than 0.05%) [Both channels driven, 8Ω]
Residual noise:	Less than 1mV
Input/impedance:	700mV/47kΩ
Output:	A or B 8Ω~16Ω A + B 16Ω

- The specifications and external appearance of this set are subject to change without prior notice.

Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of serivce.

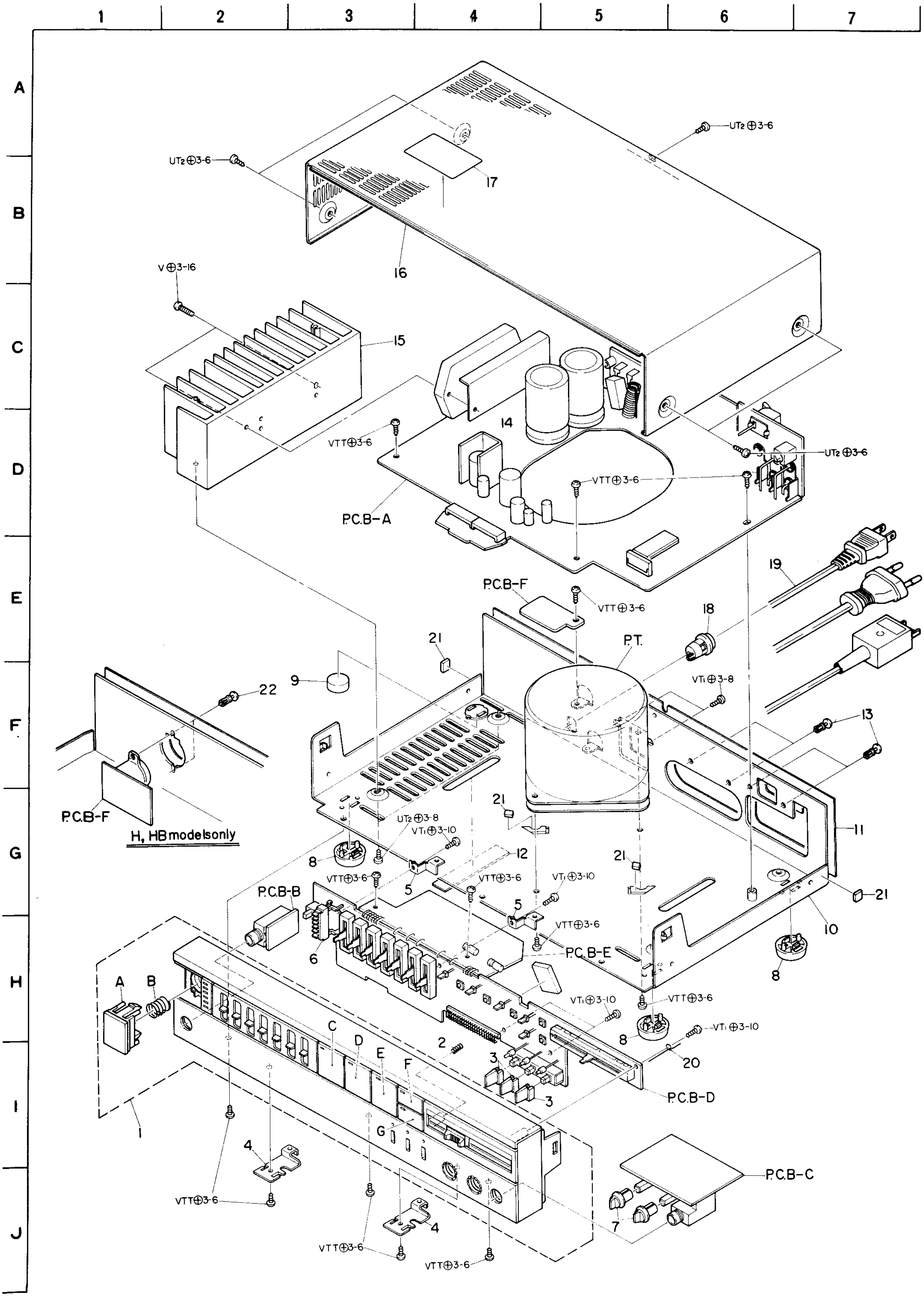
1. **No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.**
2. **No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.**
3. **When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.**
4. **The following matters shall be maintained as they are, when repairing.**
    1) Soldering of lead-wire ends
        * Care should be taken of the space distahce in an a.c. primary circuit as well as soldering.
    2) Wiring and holding of lead-wires with wire-clips and binders
    3) Materials of lead-wires
        * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
    4) Location of all kinds of insulators
    5) Setting of voltage selector switch
        * Set the Voltage Selector Switch to 240V, 220V, or 120V, According to your Local Voltage.
5. **After repaired, the insulation resistance or leakage current shall be measured with 500 ± 5V D.C and shall be not less than 1MΩ.**

Measuring Point


Connect to Chassis or Outside ⊖ of Pin Jack
Rating : More than 1MΩ/500V DC
Pin Jack (⊖)
Chassis (⊖)
AC Power Cord (⊕)

☆ MEMO ☆

EXPLODED VIEW (MX-90)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
UT2 ⊕3-6
UT2 ⊕3-6
17
16
V ⊕3-16
15
14
VTT ⊕3-6
UT2 ⊕3-6
VTT ⊕3-6
P.C.B-A
P.C.B-F
VTT ⊕3-6
19
18
21
P.T.
9
22
VT1 ⊕3-8
13
P.C.B-F
H, HB models only
21
UT2 ⊕3-8
VT1 ⊕3-10
12
8
VTT ⊕3-6
5
VTT ⊕3-6
VT1 ⊕3-10
21
11
21
10
P.C.B-B
5
VTT ⊕3-6
6
P.C.B-E
8
A
B
VT1 ⊕3-10
VTT ⊕3-6
C
D
E
8
VT1 ⊕3-10
2
20
F
3
3
P.C.B-D
1
G
4
P.C.B-C
VTT ⊕3-6
7
4
VTT ⊕3-6
VTT ⊕3-6

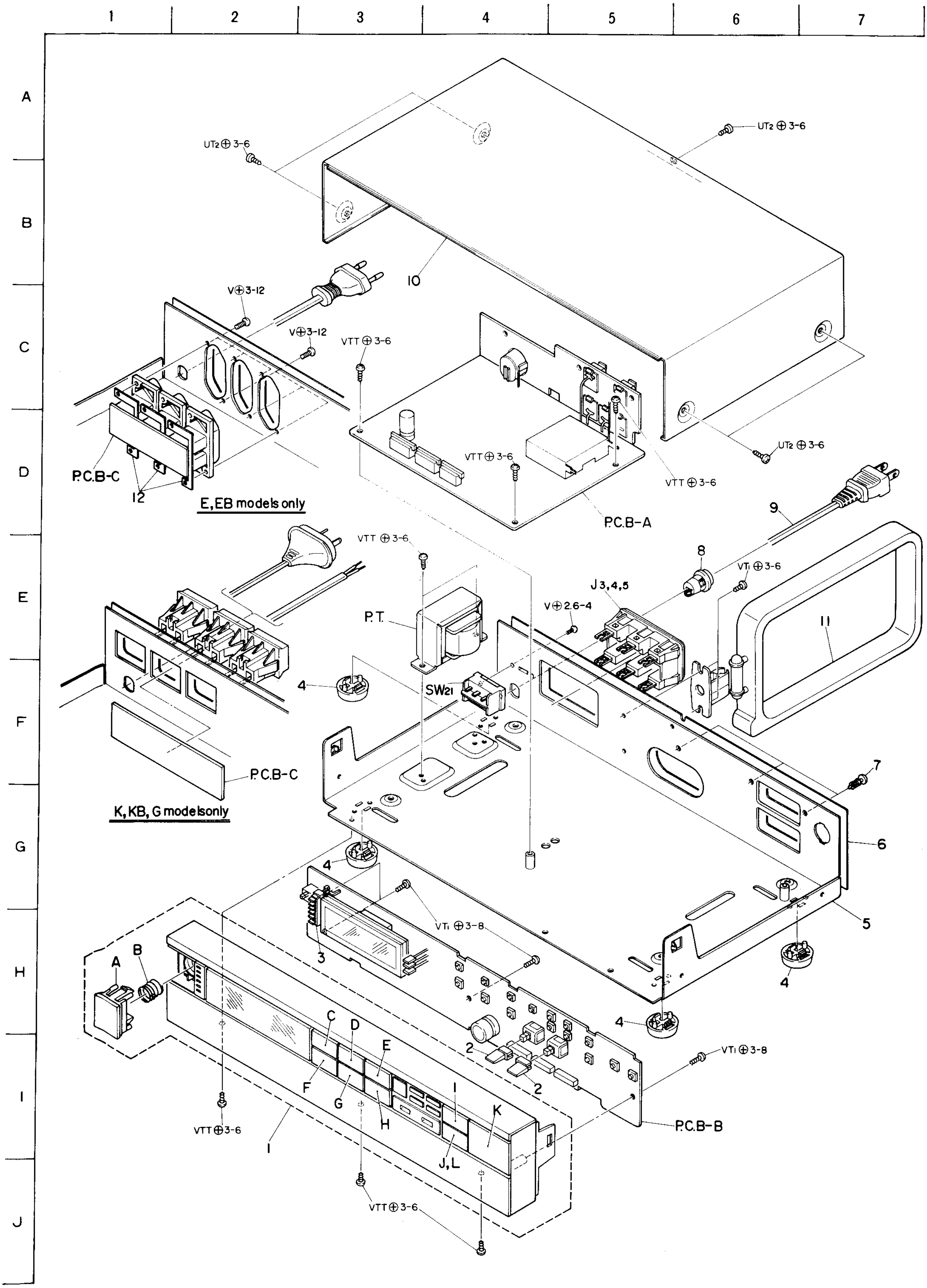
PARTS LIST

MECHNICAL PARTS (MX-90)

■ ※mark in this part list shows exclusive part.
■ "★★★" shows unavailable Repair Part.

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-798-004-01		Front cabinet ass'y (H model only)	※	1	
	82-798-046-01		Front cabinet ass'y (E, K, G models only)	※	1	
	82-798-034-01		Front cabinet ass'y (HB, UB models only)	※	1	
	82-798-072-01		Front cabinet ass'y (EB, KB models only)	※	1	
A	82-798-036-11		POWER button ass'y (H, E, K, G models only)	※	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	※	1	
B	82-798-209-01		C-spring, POWER	※	1	
C	82-798-037-01		Tape hinge ass'y (H, E, K, G models only)	※	1	
	82-798-057-01		Tape hinge ass'y (HB, UB, EB, KB models only)	※	1	
D	82-798-040-01		Tuner hinge ass'y (H, E, K, G models only)	※	1	
	82-798-060-01		Tuner hinge ass'y (HB, UB, EB, KB models only)	※	1	
E	82-798-039-01		PHONO hinge ass'y (H, E, K, G models only)	※	1	
	82-798-059-01		PHONO hinge ass'y (HB, UB, EB, KB models only)	※	1	
F	82-798-041-01		CD hinge ass'y (H, E, K, G models only)	※	1	
	82-798-061-01		CD hinge ass'y (HB, UB, EB, KB models only)	※	1	
G	82-798-038-01		AUX hinge ass'y (H, E, K, G models only)	※	1	
	82-798-058-01		AUX hinge ass'y (HB, UB, EB, KB models only)	※	1	
2	82-197-212-01		C-spring, Earth	FX-90	1	
3	82-798-023-11		Push-button, MUT	※	3	
4	82-798-207-01		Holder, A	※	2	
5	82-798-206-01		Holder, G	※	2	
6	82-798-210-01		Guide B, LED	※	1	
7	82-798-043-01		Knob L (H, E, K, G models only)	※	2	
	82-798-070-01		Knob (HB, UB, EB, KB models only)	※	2	
8	87-085-186-01		Foot		3	
9	82-798-024-01		Rubber foot	※	1	
10	82-798-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★★★
	82-798-202-01		Amp. chassis ass'y (UB, E, EB, K, KB, G models only)	※	1	★★★
11	82-798-026-01		Name plate, Jack (H model only)	※	1	★★★
	82-798-066-01		Name plate, Jack (HB model only)	※	1	★★★
	82-798-065-01		Name plate, Jack (UB model only)	※	1	★★★
	82-798-029-01		Name plate, Jack (E model only)	※	1	★★★
	82-798-067-01		Name plate, Jack (EB model only)	※	1	★★★
	82-798-030-01		Name plate, Jack (K model only)	※	1	★★★
	82-798-068-01		Name plate, Jack (KB model only)	※	1	★★★
	82-798-031-01		Name plate, Jack (G model only)	※	1	★★★
12	82-798-232-01		Sheet, IC	※	1	★★★
13	87-085-102-01		Nylon rivet 3.5-5.5		4	
14	82-798-208-01		Holder, IC	※	1	
15	82-798-601-11		Heat sink, Main	※	1	★★★
16	82-798-022-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	82-798-050-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
17	87-057-642-01		Label, TEMP	MX-100	1	★★★
18	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
19	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)		1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
20	82-798-212-01		T-spring, Earth	※	1	
21	82-798-208-01		G cushion	SA-P50	4	★★★
22	87-085-090-01		Nylon rivet 3-6.5 (H, HB models only)		2	

EXPLODED VIEW (TX-110)

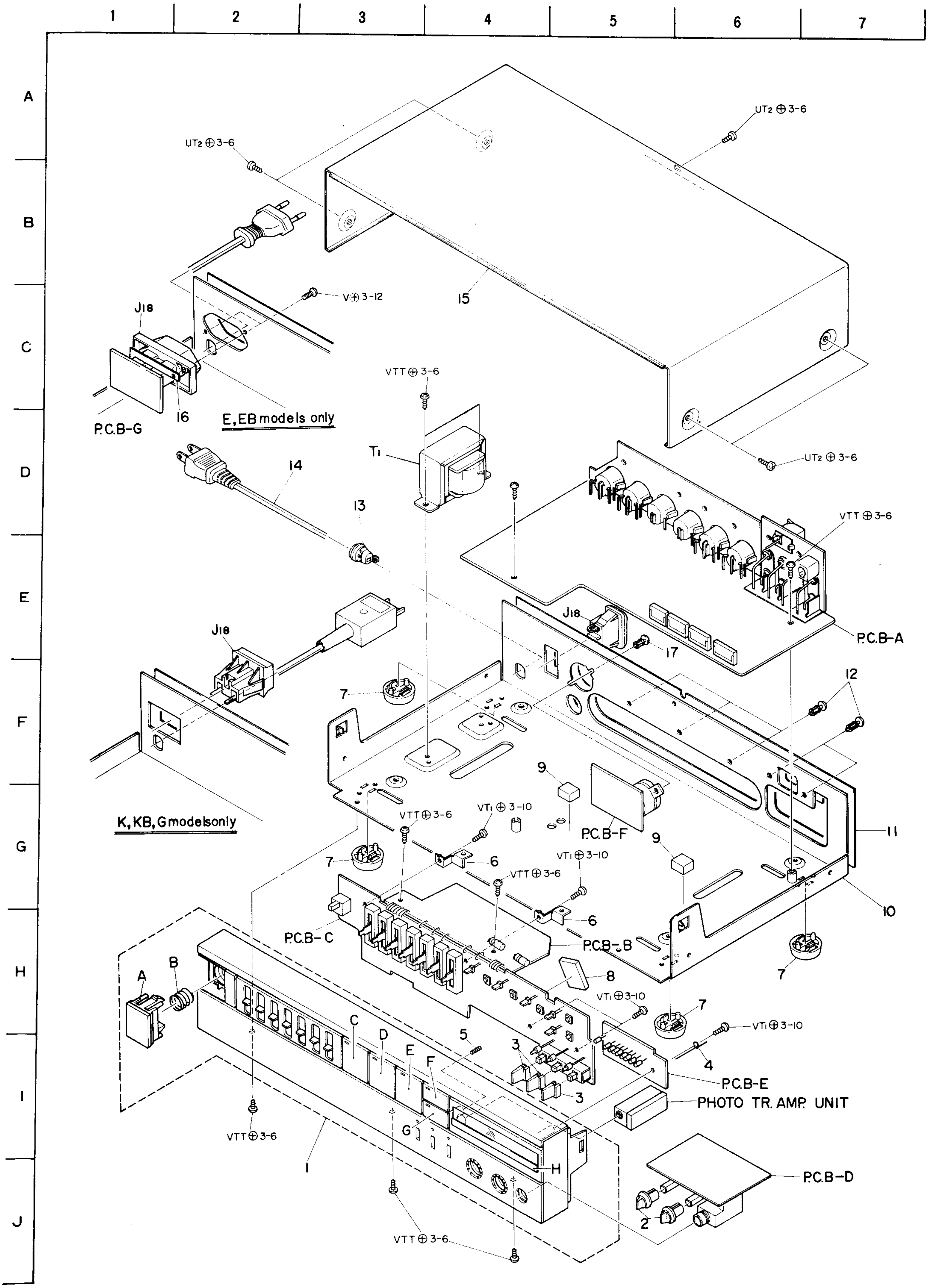

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
UT2 ⊕ 3-6
UT2 ⊕ 3-6
10
V⊕3-12
V⊕3-12
VTT ⊕ 3-6
UT2 ⊕ 3-6
VTT ⊕ 3-6
VTT ⊕ 3-6
P.C.B-C
12
E, EB models only
P.C.B-A
9
VTT ⊕ 3-6
8
VT1 ⊕ 3-6
J 3, 4, 5
V⊕2.6-4
P.T.
11
4
SW21
P.C.B-C
K, KB, G models only
7
6
4
VT1 ⊕3-8
3
5
A
B
4
4
C
D
E
2
2
VT1 ⊕3-8
F
G
H
I
K
J, L
P.C.B-B
VTT⊕3-6
I
VTT⊕3-6

PARTS LIST

MECHNICAL PARTS (TX-110)

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-799-004-11		Front cabinet ass'y (H model only)	※	1	
	82-799-036-01		Front cabinet ass'y (HB, UB models only)	※	1	
	82-799-005-11		Front cabinet ass'y (E, K, G models only)	※	1	
	82-799-074-01		Front cabinet ass'y (EB, KB models only)	※	1	
A	82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
B	82-798-209-01		C-spring, POWER	MX-90	1	
C	82-799-038-01		Hinge 1 ass'y (H, E, K, G models only)	※	1	
	82-799-061-01		Hinge 1 ass'y (HB, UB, EB, KB models only)	※	1	
D	82-799-039-01		Hinge 2 ass'y (H, E, K, G models only)	※	1	
	82-799-062-01		Hinge 2 ass'y (HB, UB, EB, KB models only)	※	1	
E	82-799-040-01		Hinge 3 ass'y (H, E, K, G models only)	※	1	
	82-799-063-01		Hinge 3 ass'y (HB, UB, EB, KB models only)	※	1	
F	82-799-041-01		Hinge 4 ass'y (H, E, K, G models only)	※	1	
	82-799-064-01		Hinge 4 ass'y (HB, UB, EB, KB models only)	※	1	
G	82-799-042-01		Hinge 5 ass'y (H, E, K, G models only)	※	1	
	82-799-065-01		Hinge 5 ass'y (HB, UB, EB, KB models only)	※	1	
H	82-799-043-01		Hinge 6 ass'y (H, E, K, G models only)	※	1	
	82-799-066-01		Hinge 6 ass'y (HB, UB, EB, KB models only)	※	1	
I	82-799-044-01		Hinge FM ass'y (H, E, K, G models only)	※	1	
	82-799-067-01		Hinge FM ass'y (HB, UB, EB, KB models only)	※	1	
J	82-799-045-01		Hinge AM ass'y (H model only)	※	1	
	82-799-068-01		Hinge AM ass'y (HB, UB models only)	※	1	
K	82-799-046-11		Hinge UP ass'y (H, E, K, G models only)	※	1	
	82-799-070-01		Hinge UP ass'y (HB, UB, EB, KB models only)	※	1	
L	82-799-050-01		Hinge MW ass'y (E, K, G models only)	※	1	
	82-799-069-01		Hinge MW ass'y (EB, KB models only)	※	1	
2	82-799-025-11		Push-button	※	2	
3	82-798-210-01		Guide, LED	MX-90	1	
4	87-085-186-01		Foot		4	
5	82-799-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★★★
	82-799-202-01		Amp. chassis ass'y (UB model only)	※	1	★★★
	82-799-206-01		Amp. chassis ass'y (E, EB models only)	※	1	★★★
	82-799-212-01		Amp. chassis ass'y (K, KB models only)	※	1	★★★
	82-799-208-01		Amp. chassis ass'y (G model only)	※	1	★★★
6	82-799-028-01		Name plate, Jack (H model only)	※	1	★★★
	82-799-081-01		Name plate, Jack (HB model only)	※	1	★★★
	82-799-080-01		Name plate, Jack (UB model only)	※	1	★★★
	82-799-031-01		Name plate, Jack (E model only)	※	1	★★★
	82-799-082-01		Name plate, Jack (EB model only)	※	1	★★★
	82-799-032-01		Name plate, Jack (K model only)	※	1	★★★
	82-799-083-01		Name plate, Jack (KB model only)	※	1	★★★
	82-799-033-01		Name plate, Jack (G model only)	※	1	★★★
7	87-085-102-01		Nylon rivet 3.5-5.5		3	
8	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
9	87-034-956-01		AC power cord (H model only)		1	
	87-034-958-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	87-034-877-01		AC power cord (E, EB models only)		1	
	87-034-975-01		AC power cord (K, KB models only)		1	
	87-034-892-01		AC power cord (G model only)		1	
10	82-799-026-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	82-799-072-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
11	82-791-652-01		Loop antenna ass'y (H, E, K, G models only)	TX-70	1	
	82-795-670-01		Loop antenna ass'y (HB, UB, EB, KB models only)	RX-30	1	
12	82-773-216-01		Plate nut (E, EB models only)	AT-9500	3	

EXPLODED VIEW (GX-110)

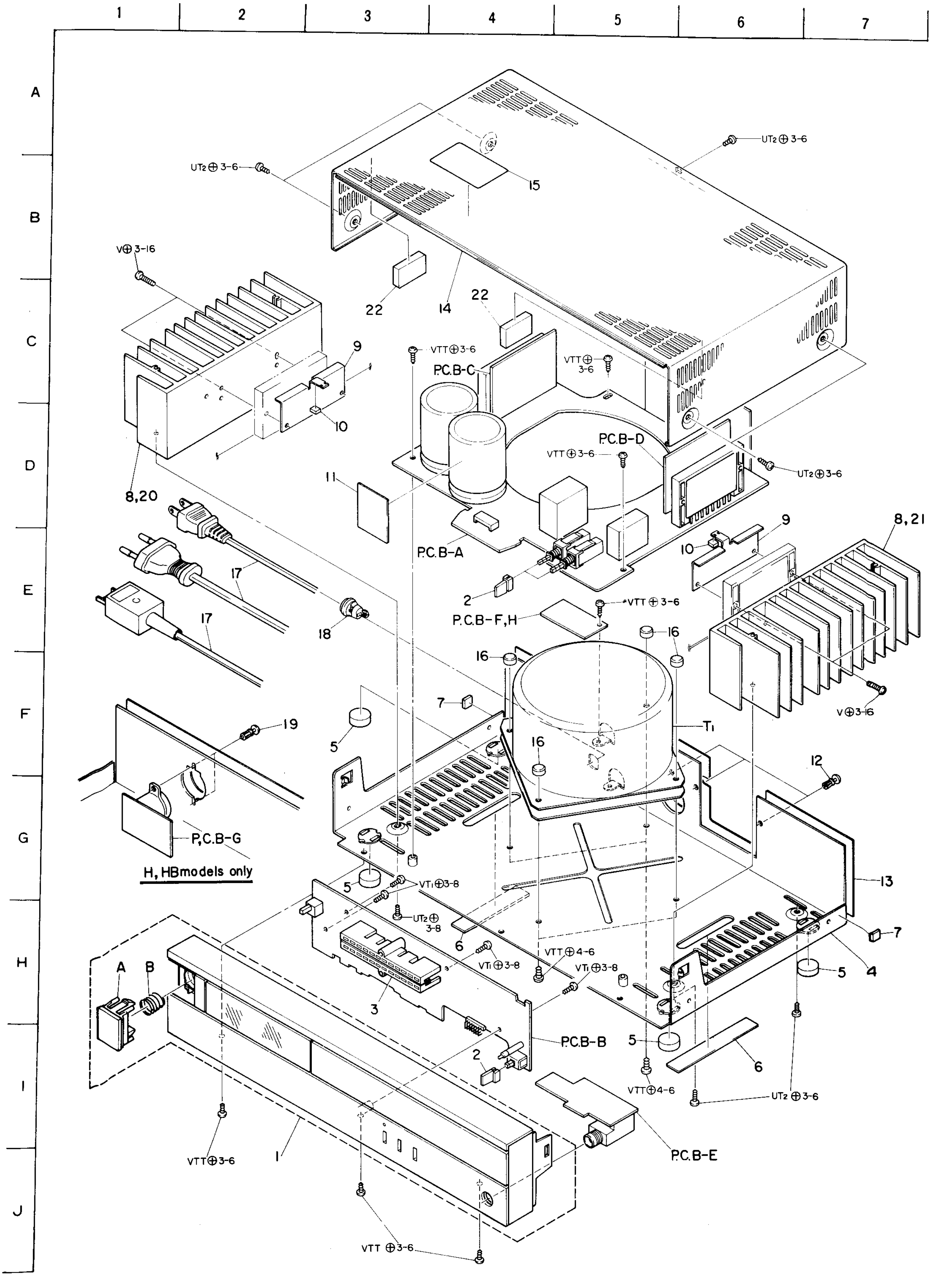

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
UT2 ⊕ 3-6
UT2 ⊕ 3-6
V⊕ 3-12
15
J18
P.C.B-G
16
E, EB models only
VTT ⊕ 3-6
T1
UT2 ⊕ 3-6
14
13
VTT ⊕ 3-6
J18
P.C.B-A
J18
17
12
7
9
P.C.B-F
11
K, KB, G modelsonly
VTT⊕3-6
VT1 ⊕ 3-10
7
6
9
VT1 ⊕ 3-10
VTT ⊕ 3-6
10
P.C.B- C
6
P.C.B- B
7
A
B
8
7
VT1⊕3-10
VT1⊕3-10
C
D
E
F
5
3
4
P.C.B-E
3
PHOTO TR. AMP. UNIT
VTT⊕3-6
G
1
H
P.C.B-D
2
VTT ⊕ 3-6

PARTS LIST

MECHNICAL PARTS (GX-110)

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-731-002-01		Front cabinet ass'y (H, E, K, G models only)	※	1	
	81-731-004-01		Front cabinet ass'y (HB, UB, EB, KB models only)	※	1	
A	82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
B	82-798-209-01		C-spring, POWER	MX-90	1	
C	82-798-037-01		TAPE hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-057-01		TAPE hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
D	82-798-040-01		TUNER hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-060-01		TUNER hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
E	82-798-039-01		PHONO hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-059-01		PHONO hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
F	82-798-041-01		CD hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-061-01		CD hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
G	82-798-038-01		AUX hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-058-01		AUX hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
H	81-731-019-01		Push-key, VR (H, E, K, G models only)	※	1	
	81-731-024-01		Push-key, VR (HB, UB, EB, KB models only)	※	1	
2	82-798-043-01		Knob (H, E, K, G models only)	MX-90	2	
	82-798-070-01		Knob (HB, UB, EB, KB models only)	MX-90	2	
3	82-798-023-11		Push-button, MUT	MX-90	3	
4	82-798-212-01		T-spring, Earth	MX-90	1	
5	82-197-212-01		C-spring, Earth	FX-90	1	
6	82-798-206-01		Holder G	MX-90	2	
7	87-085-186-01		Foot		4	
8	87-063-116-01		Cushion 30-15		1	★★★
9	82-157-226-01		G cushion, Main	SD-L50	2	★★★
10	81-731-206-01		Amp. chassis ass'y (H, HB models only)	※	1	★★★
	81-731-210-01		Amp. chassis ass'y (UB model only)	※	1	★★★
	81-731-204-01		Amp. chassis ass'y (E, EB models only)	※	1	★★★
	81-731-216-01		Amp. chassis ass'y (K, KB, G models only)	※	1	★★★
11	81-731-015-01		Name plate, Jack (H model only)	※	1	★★★
	81-731-026-01		Name plate, Jack (HB model only)	※	1	★★★
	81-731-025-01		Name plate, Jack (UB model only)	※	1	★★★
	81-731-012-01		Name plate, Jack (E model only)	※	1	★★★
	81-731-027-01		Name plate, Jack (EB model only)	※	1	★★★
	81-731-013-01		Name plate, Jack (K model only)	※	1	★★★
	81-731-028-01		Name plate, Jack (KB model only)	※	1	★★★
	81-731-014-01		Name plate, Jack (G model only)	※	1	★★★
12	87-085-102-01		Nylon rivet 3.5-5.5		5	
13	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
14	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)	MX-100	1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
15	82-799-026-01		Cabinet, Steel (H, E, K, G models only)	TX-110	1	
	82-799-072-01		Cabinet, Steel (HB, UB, EB, KB models only)	TX-110	1	
16	82-773-216-01		Plate nut (E, EB models only)	AT-9500	1	
17	87-085-090-01		Nylon rivet 3-6.5 (H, HB models only)		2	

EXPLODED VIEW (BX-110)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
UT2 ⊕ 3-6
UT2 ⊕ 3-6
15
V⊕ 3-16
22
14
22
9
10
VTT⊕3-6
P.C.B-C
VTT⊕ 3-6
P.C.B-D
VTT ⊕ 3-6
UT2⊕3-6
8,20
11
P.C.B-A
9
8,21
10
17
17
18
2
VTT ⊕ 3-6
P.C.B-F,H
16
16
7
5
V⊕3-16
19
T1
16
12
P,C.B-G
H, HB models only
5
VT1⊕3-8
UT2⊕ 3-8
13
6
7
VT1⊕3-8
VTT⊕4-6
VT1⊕3-8
5
4
A
B
3
P.C.B-B
5
6
2
VTT⊕4-6
UT2 ⊕3-6
VTT⊕3-6
1
P.C.B-E
VTT ⊕3-6

PARTS LIST

MECANICAL PARTS

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-730-004-11		Front Cabinet ass'y (H, E, K, G models only)	※	1	
	81-730-031-01		Front Cabinet ass'y (HB, UB, EB, KB models only)	※	1	
A	82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
B	82-798-209-01		C-spring, POWER	MX-90	1	
2	82-798-023-11		Push-button, MUT	MX-90	3	
3	81-730-206-01		Guide, LED	※	2	★★★
4	81-730-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★★★
	81-730-202-01		Amp. chassis ass'y (UB, E, EB, K, KB, G models only)	※	1	★★★
5	82-798-024-01		Rubber foot	MX-90	4	
6	82-798-232-01		Sheet, IC	MX-90	2	★★★
7	82-749-208-01		G cushion	SA-P50	2	★★★
8	82-798-601-11		Heat sink, Main (H, HB, UB models only)	MX-90	2	★★★
9	82-781-206-01		Plate nut	SA-P80	2	
10	81-730-209-01		G cushion 6-6-3	※	2	★★★
11	81-730-208-11		Sheet 30-36-0.1	※	1	★★★
12	87-085-102-01		Nylon rivet 3.5-5.5		3	
13	81-730-013-01		Name plate, Jack (H model only)	※	1	★★★
	81-730-027-01		Name plate, Jack (HB model only)	※	1	★★★
	81-730-026-01		Name plate, Jack (UB model only)	※	1	★★★
	81-730-014-01		Name plate, Jack (E model only)	※	1	★★★
	81-730-028-01		Name plate, Jack (EB model only)	※	1	★★★
	81-730-015-01		Name plate, Jack (K model only)	※	1	★★★
	81-730-029-01		Name plate, Jack (KB model only)	※	1	★★★
	81-730-016-01		Name plate, Jack (G model only)	※	1	★★★
14	81-730-010-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	81-730-025-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
15	87-057-642-01		Label, TEMP (H, HB, UB models only)		1	★★★
	87-057-712-01		Label, TEMP (E, EB, K, KB, G models only)		1	★★★
16	82-752-206-01		Cover, Nut	SA-P50	4	★★★
17	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)	MX-100	1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
18	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
19	87-085-090-01		Nylon rivet (H, HB models only)		2	
20	81-730-624-01		Heat sink L (E, EB, K, KB, G models only)	※	1	★★★
21	81-730-625-01		Heat sink R (E, EB, K, KB, G models only)	※	1	★★★
22	81-730-211-01		G cushion	※	2	★★★

Part No.	Description
87-261-071-21	V+2.6-4
87-261-097-21	V+3-12
87-355-094-21	VT_1+3-6
87-350-095-01	VT_1+3-8
87-081-511-01	VTT+3-6
87-340-094-01	UT_2+3-6

Part No.	Description
87-261-100-21	V+3-16
87-350-095-01	VT_1+3-8
87-351-096-21	VT_1+3-10
87-081-511-01	VTT+3-6
87-340-094-01	UT_2+3-6
87-343-095-21	UT_2+3-8

Part No.	Description
87-268-097-11	V+3-12
87-351-096-21	VT_1+3-10
87-081-511-01	VTT+3-6
87-340-094-01	UT_2+3-6

Part No.	Description
87-261-100-21	V+3-16
87-350-095-01	VT_1+3-8
87-081-511-01	VTT+3-6
87-081-931-01	VTT+4-6
87-340-094-01	UT_2+3-6
87-343-095-21	UT_2+3-8

☆ **MEMO** ☆

ACCESSORIES/PACKAGE LIST

MX-90

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-798-853-01		Printed indiv., Packing	※	1	★★★
2	81-730-852-11		Cushion L, Printed indiv.		1	★★★
3	81-730-853-21		Cushion R, Printed indiv.		1	★★★
4	87-056-610-01		Poly-vinyl sack (for case)		1	★★★
5	82-798-854-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★★★
6	82-798-855-01		Carton, Outer (UB model only)	※	1/2	★★★
7	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★★★
8	82-798-904-01		Instructions booklet	※	1	
9	87-056-009-51		Distributos list (H, HB, E, EB, K, KB, G models only)		1	★★★
10	87-051-171-11		Poly-vinyl sack (for instruction)		1	★★★
11	87-056-059-01		Guarantee card (G model only)		1	★★★
12	87-056-045-01		Guarantee card (UB model only)		1	★★★
13	87-056-050-01		Safety instruction (UB model only)		1	★★★
14	87-056-008-11		Label, AC power cord (K, KB models only)		1	
15	87-056-084-01		Limited, Warranty (UB model only)		1	

TX-110

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-799-855-01		Printed indiv., Packing	※	1	★★★
2	82-799-852-01		Cushion L, Printed indiv.	※	1	★★★
3	82-799-853-11		Cushion R, Printed indiv.	※	1	★★★
4	82-799-856-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★★★
5	82-799-857-01		Carton, Outer (UB model only)	※	1/2	★★★
6	87-056-610-01		Poly-vinyl sack (for case)		1	★★★
7	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★★★
8	82-799-904-01		Instruction booklet	※	1	
9	87-051-171-11		Poly-vinyl sack (for instruction)		1	★★★
10	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★★★
11	87-056-059-01		Guarantee card (G model only)		1	★★★
12	87-056-045-01		Guarantee card (UB model only)		1	★★★
13	87-056-008-11		Label, AC power cord (K, KB models only)		1	★★★
14	87-056-050-01		Safety instruction (UB model only)		1	★★★
15	87-056-084-01		Limited, Warranty (UB model only)		1	★★★
16	82-791-652-01		Loop antenna ass'y (H, E, K, G models only)	TX-70	1	
17	82-795-670-01		Loop antenna ass'y (HB, UB, EB, KB models only)		1	
18	87-032-845-01		Siemens plug (H, HB models only)		1	
19	87-043-065-01		FM feeder antenna		1	
20	87-034-968-01		Connection cord CW-255GSK		1	

GX-110

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-731-853-01		Printed indiv., Packing	※	1	★★★
2	82-799-852-01		Cushion L, Printed indiv.	TX-110	1	★★★
3	82-799-853-11		Cushion R, Printed endiv.	TX-110	1	★★★
4	81-731-854-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★★★
5	81-731-855-01		Carton, Outer (UB model only)	※	1/2	★★★
6	81-731-856-01		Sleeve, Corrugated board	※	1	★★★
7	85-263-854-01		Bag, Air-cap (for remote control)		1	★★★
8	87-056-610-01		Poly-vinyl, sack (for case)		1	★★★
9	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★★★
10	81-731-904-01		Instructions booklet	※	1	
11	87-051-171-11		Poly-vinyl sack (for instruction)		1	★★★
12	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★★★
13	87-056-050-01		Safety instruction (UB model only)		1	★★★
14	87-056-084-01		Limited, Warranty (UB model only)		1	★★★
15	87-056-059-01		Guarantee card (G model only)		1	★★★
16	87-056-045-01		Guarantee card (UB model only)		1	★★★
17	81-731-638-01		Remote control T-110 (H, K, G models only)	※	1	
18	81-731-653-01		Remote control T-110 Black (HB, UB, KB models only)	※	1	
19	81-731-654-01		Remote control T-110A Black (EB model only)	※	1	
20	81-731-639-01		Remote control T-110A (E model only)	※	1	
21	85-439-002-01		Syncrate cord, CW-150K		1	
	87-056-008-11		Label, AC power cord (K, KB models only)			★★★

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-730-855-01		Printed indiv., Packing	※	1	★★★
2	81-730-852-11		Cushion L, Printed indiv.	※	1	★★★
3	81-730-853-21		Cushion R, Printed indiv.	※	1	★★★
4	81-730-856-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★★★
5	81-730-857-01		Carton, Outer (UB model only)	※	1/2	★★★
6	81-730-858-01		Auxiliary cushion	※	1	★★★
7	87-056-610-01		Poly-vinyl sack (for case)		1	★★★
8	87-056-651-01		Color label Black (HB, UB, EB, KB models only)		1	★★★
9	81-730-904-01		Instructions booklet	※	1	
10	87-051-171-11		Poly-vinyl sack (for instruction)		1	★★★
11	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★★★
12	87-056-059-01		Guarantee card (G model only)		1	★★★
13	87-056-045-01		Guarantee card (UB model only)		1	★★★
14	87-056-084-01		Limited, Warranty (UB model only)		1	★★★
15	87-056-074-01		Poly-vinyl sack (for guarantee card)		1	★★★
16	87-056-008-11		Label, AC power cord (K, KB models only)		1	★★★
17	87-056-050-01		Safety instruction (UB model only)		1	★★★
18	87-034-968-01		Connection cord CW-255GSK		1	

AIWA Co., Ltd. Tokyo Japan

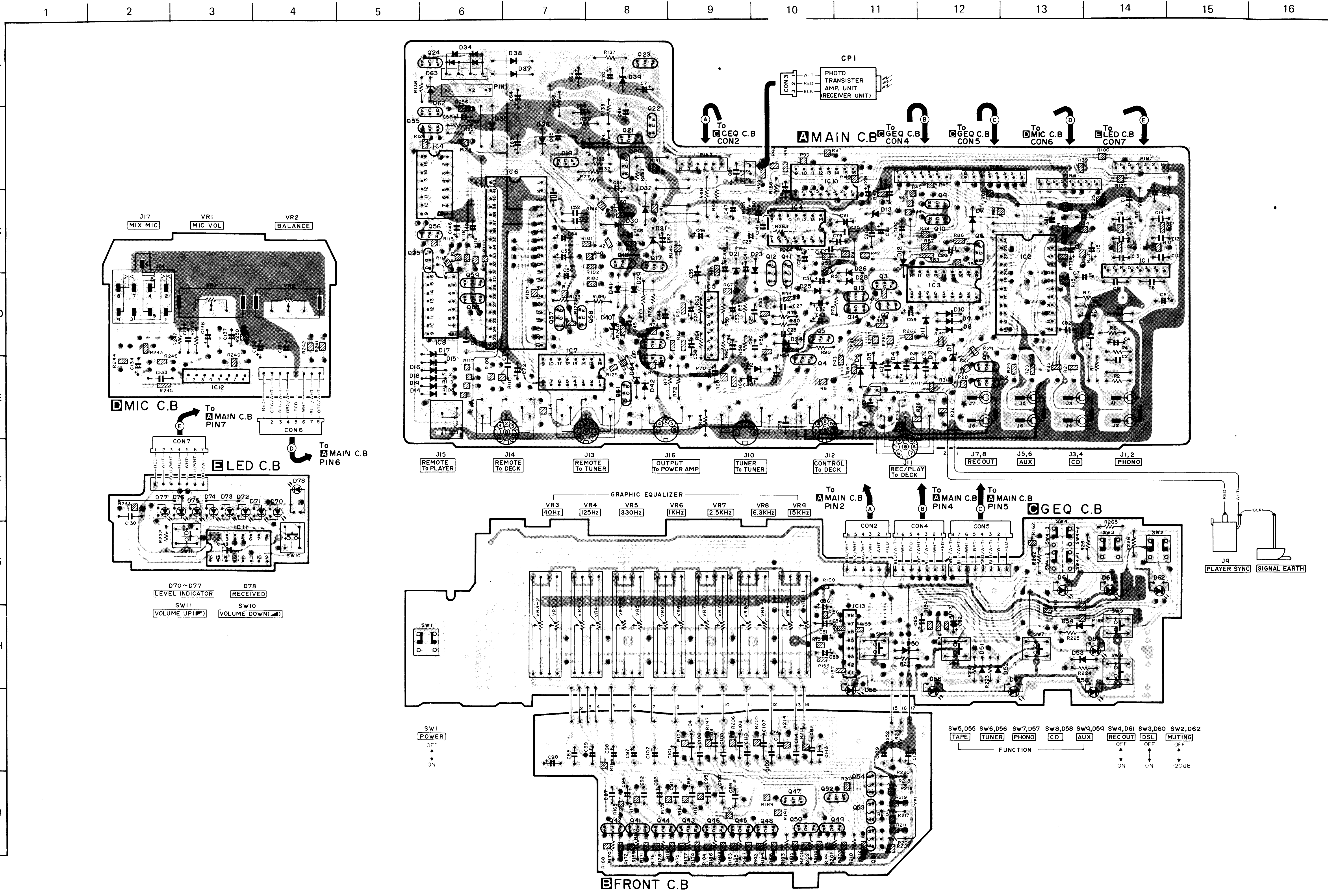
Printed in Japan

AIWA®

NOTES (1) ▨ Earth pattern ▨ Printed resistor pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

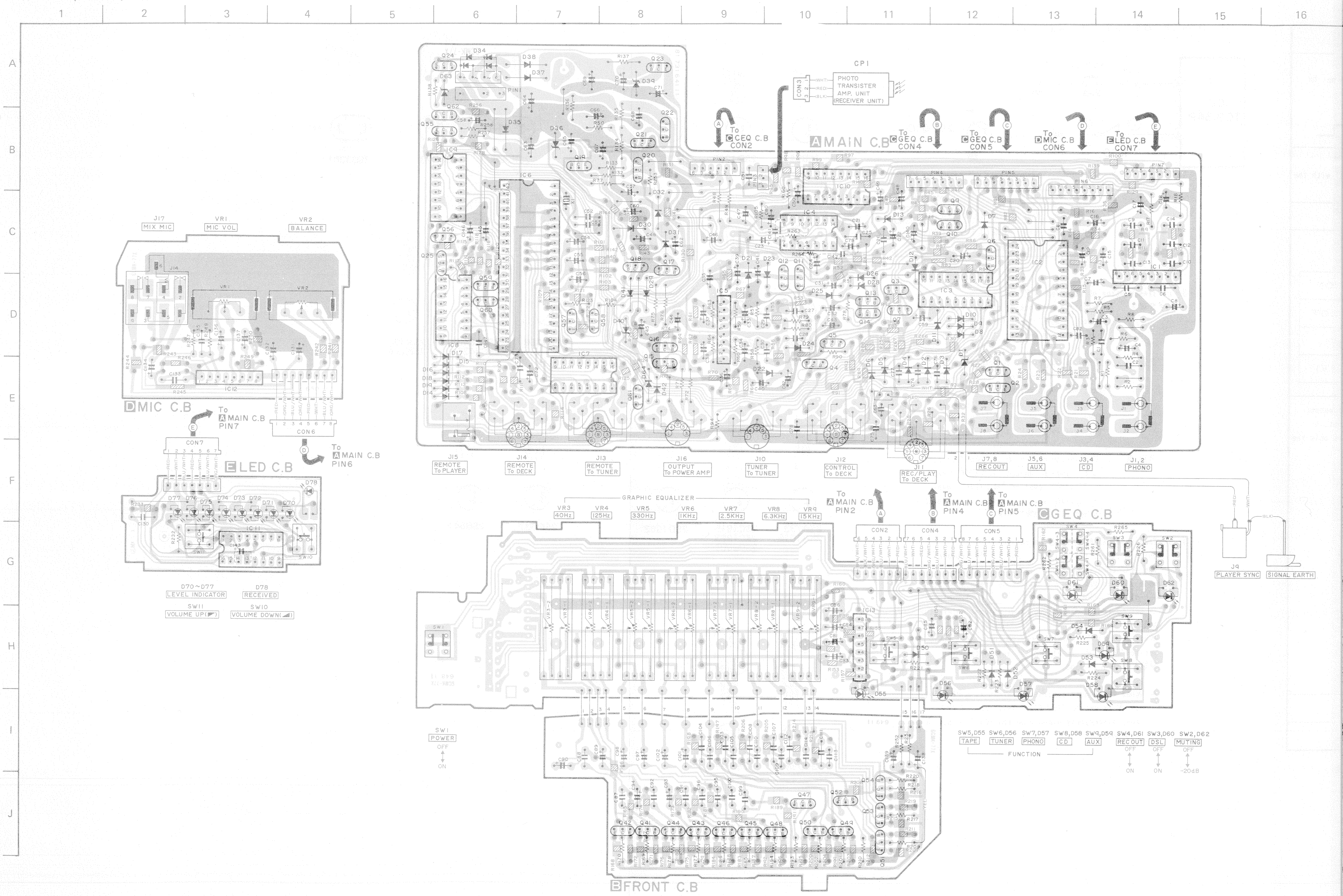
WIRING (GX-110)

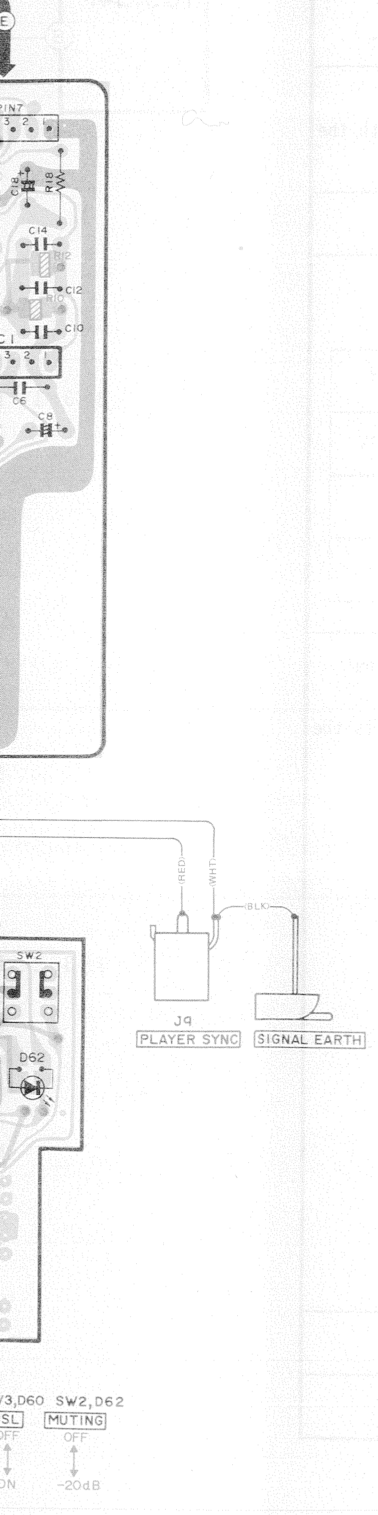

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
A MAIN C.B
B FRONT C.B
C GEQ C.B
D MIC C.B
E LED C.B
CP1
PHOTO TRANSISTER AMP. UNIT (RECEIVER UNIT)
CON3
WHT RED BLK
To C CEQ C.B CON2
To C GEQ C.B CON4
To C GEQ C.B CON5
To D MIC C.B CON6
To E LED C.B CON7
To A MAIN C.B PIN7
To A MAIN C.B PIN6
To A MAIN C.B PIN2
To A MAIN C.B PIN4
To A MAIN C.B PIN5
J17 MIX MIC
VR1 MIC VOL
VR2 BALANCE
IC12
CON6
CON7
IC11
D70~D77 LEVEL INDICATOR
D78 RECEIVED
SW11 VOLUME UP
SW10 VOLUME DOWN
J15 REMOTE To PLAYER
J14 REMOTE To DECK
J13 REMOTE To TUNER
J16 OUTPUT To POWER AMP
J10 TUNER To TUNER
J12 CONTROL To DECK
J11 REC/PLAY To DECK
J7,8 REC OUT
J5,6 AUX
J3,4 CD
J1,2 PHONO
J9 PLAYER SYNC
SIGNAL EARTH
GRAPHIC EQUALIZER
VR3 40Hz
VR4 125Hz
VR5 330Hz
VR6 1KHz
VR7 2.5KHz
VR8 6.3KHz
VR9 15KHz
CON2 CON4 CON5
IC1 IC2 IC3 IC4 IC5 IC6 IC7 IC8 IC9 IC10 IC13
SW1 POWER OFF ON
SW5,D55 TAPE
SW6,D56 TUNER
SW7,D57 PHONO
SW8,D58 CD
SW9,D59 AUX
FUNCTION
SW4,D61 REC OUT OFF ON
SW3,D60 DSL OFF ON
SW2,D62 MUTING OFF -20dB

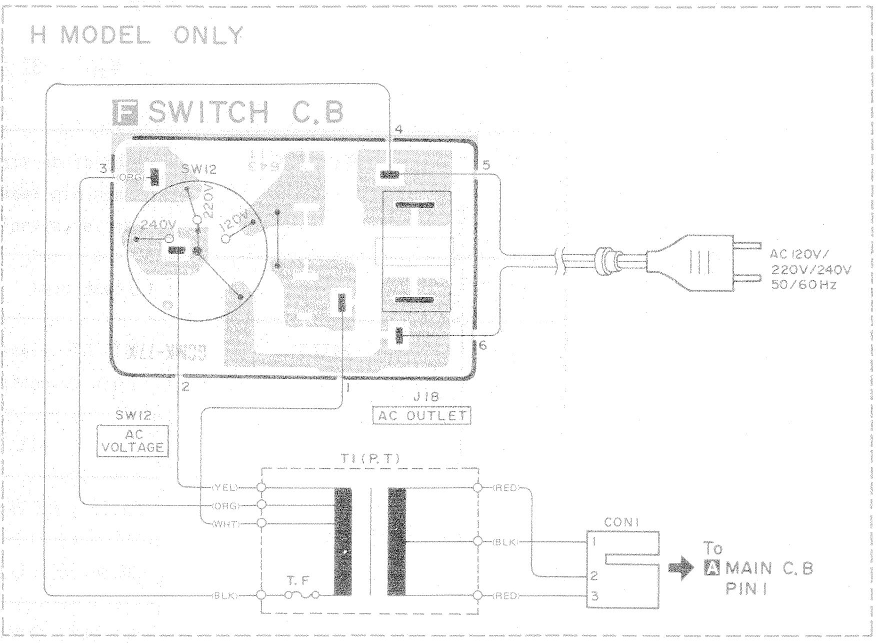
WIRING (GX-110)

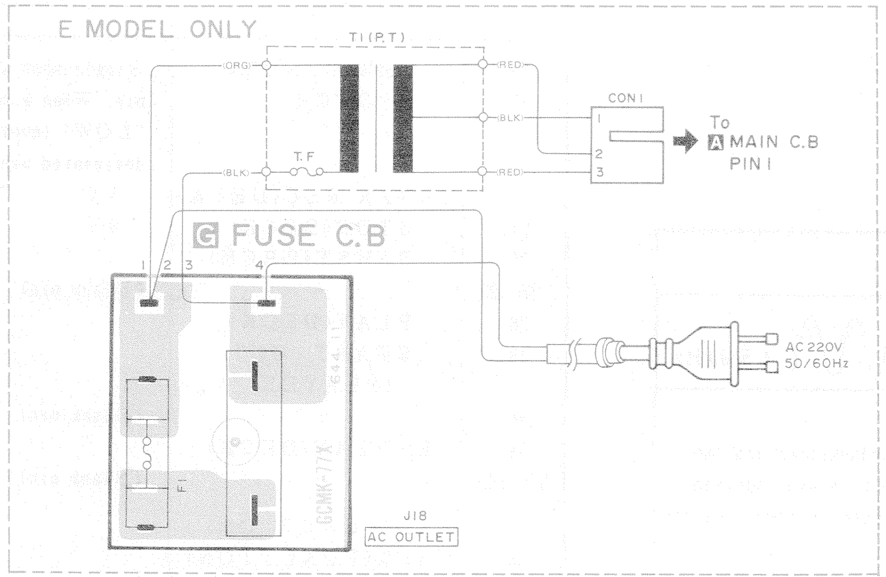
NOTES (1) ▨ Earth pattern ▨ Printed resistor pattern ▨ Others pattern

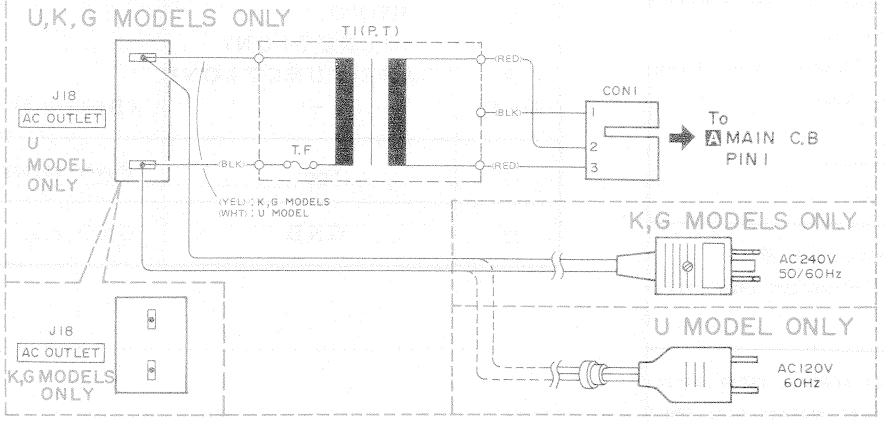
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

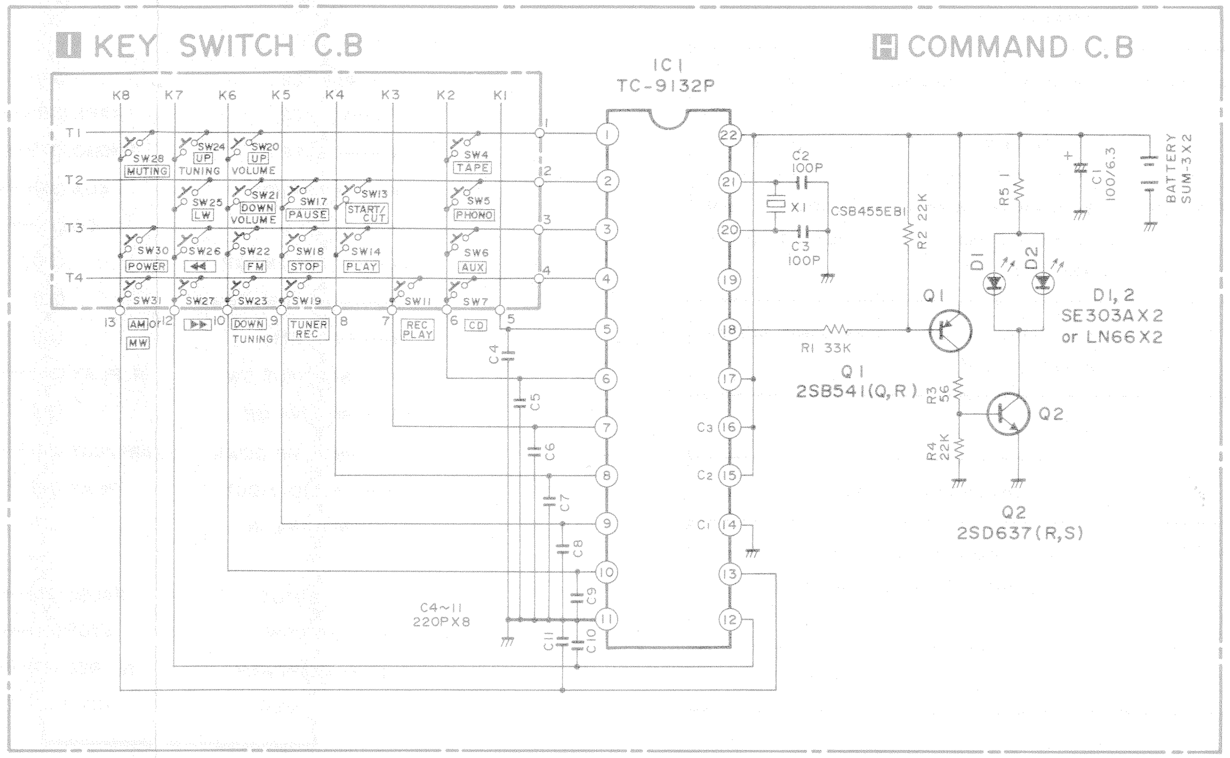

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A MAIN C.B
B FRONT C.B
C GEQ C.B
D MIC C.B
E LED C.B
CP1
PHOTO TRANSISTER AMP. UNIT (RECEIVER UNIT)
CON3
WHT
RED
BLK
To C GEQ C.B CON2
To C GEQ C.B CON4
To C GEQ C.B CON5
To D MIC C.B CON6
To E LED C.B CON7
To A MAIN C.B PIN7
To A MAIN C.B PIN6
To A MAIN C.B PIN2
To A MAIN C.B PIN4
To A MAIN C.B PIN5
J17 MIX MIC
VR1 MIC VOL
VR2 BALANCE
J15 REMOTE To PLAYER
J14 REMOTE To DECK
J13 REMOTE To TUNER
J16 OUTPUT To POWER AMP
J10 TUNER To TUNER
J12 CONTROL To DECK
J11 REC/PLAY To DECK
J7,8 REC OUT
J5,6 AUX
J3,4 CD
J1,2 PHONO
J9 PLAYER SYNC
SIGNAL EARTH
GRAPHIC EQUALIZER
VR3 40Hz
VR4 125Hz
VR5 330Hz
VR6 1KHz
VR7 2.5KHz
VR8 6.3KHz
VR9 15KHz
D70~D77 LEVEL INDICATOR
D78 RECEIVED
SW11 VOLUME UP
SW10 VOLUME DOWN
SW1 POWER
OFF
ON
SW5,D55 TAPE
SW6,D56 TUNER
SW7,D57 PHONO
SW8,D58 CD
SW9,D59 AUX
FUNCTION
SW4,D61 REC OUT
OFF
ON
SW3,D60 DSL
OFF
ON
SW2,D62 MUTING
OFF
-20dB

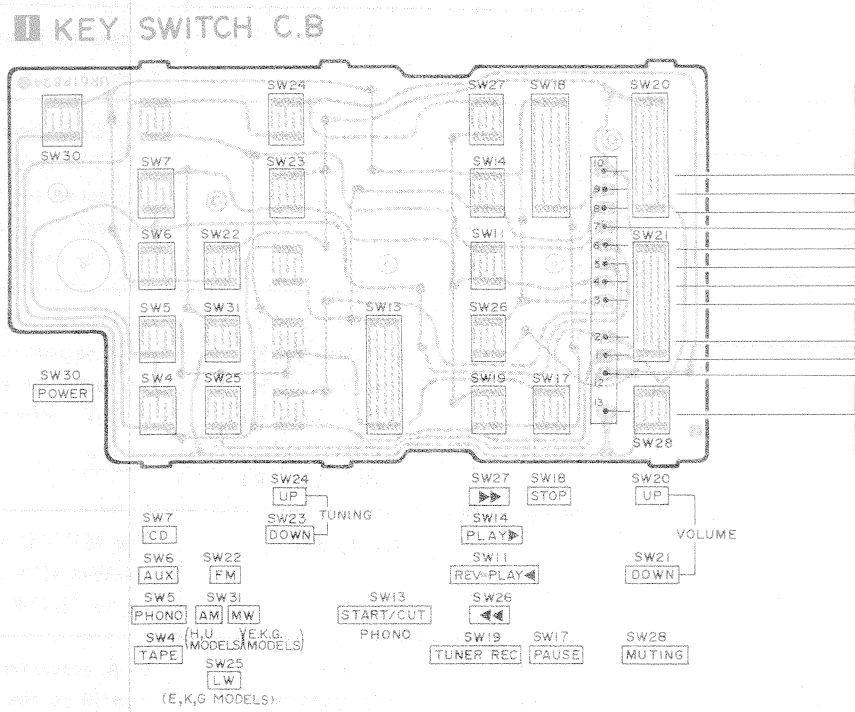

C18
R18
C14
C12
C10
C8
C6
SW2
D62
J9
PLAYER SYNC
SIGNAL EARTH
RED
WHT
BLK
/3,D60 SW2,D62
SL
MUTING
OFF
ON
OFF
-20dB

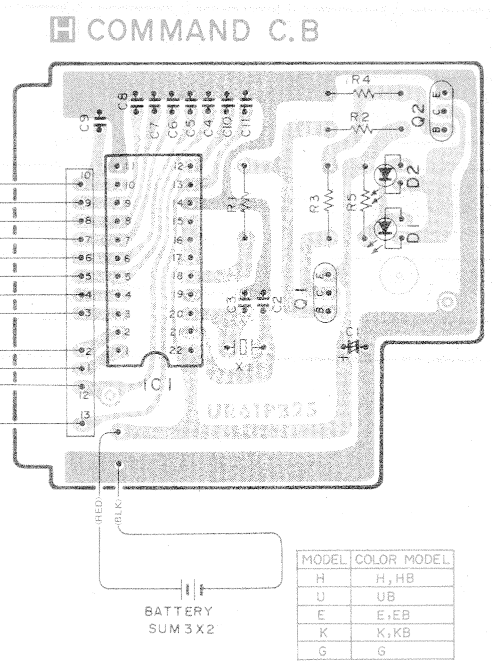

H MODEL ONLY
F SWITCH C.B
SW12
240V
220V
120V
J18
AC OUTLET
SW12
AC VOLTAGE
AC 120V/
220V/240V
50/60Hz
T1(P.T)
ORG
YEL
WHT
BLK
RED
T.F
CON1
To
A MAIN C.B
PIN 1


E MODEL ONLY
T1(P.T)
ORG
BLK
RED
T.F
CON1
To
A MAIN C.B
PIN 1
G FUSE C.B
F1
J18
AC OUTLET
AC 220V
50/60Hz

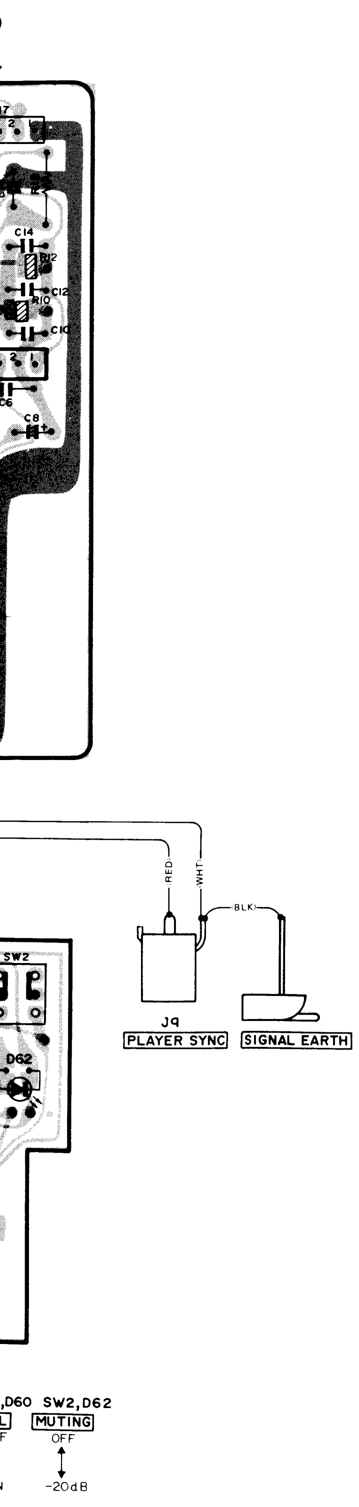

U,K,G MODELS ONLY
T1(P.T)
J18
AC OUTLET
U
MODEL
ONLY
RED
BLK
T.F
(YEL) : K,G MODELS
(WHT) : U MODEL
CON1
To
A MAIN C.B
PIN 1
K,G MODELS ONLY
AC 240V
50/60Hz
U MODEL ONLY
AC 120V
60Hz
J18
AC OUTLET
K,G MODELS
ONLY

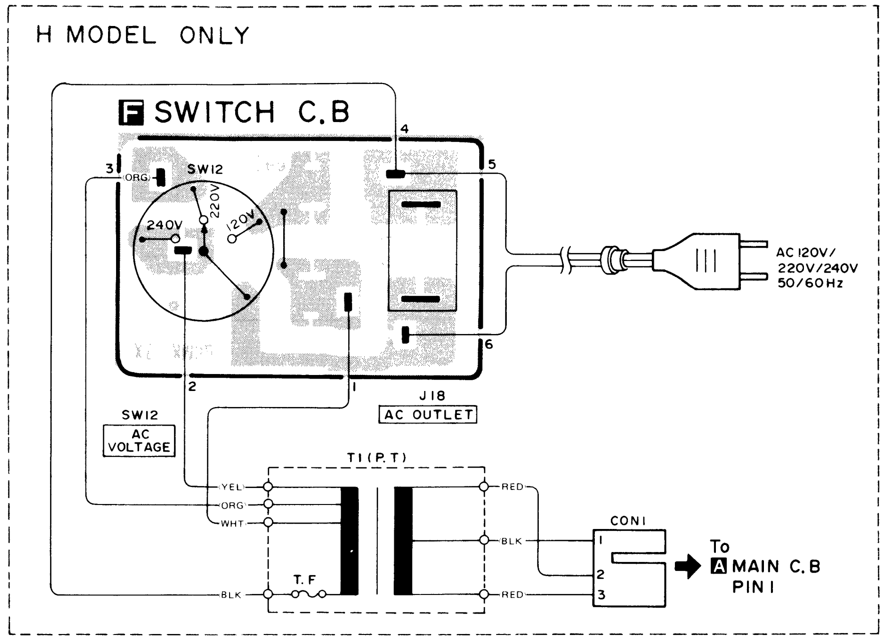

I KEY SWITCH C.B
H COMMAND C.B
IC1
TC-9132P
K8 K7 K6 K5 K4 K3 K2 K1
T1
T2
T3
T4
SW28 MUTING
SW24 UP TUNING
SW20 UP VOLUME
SW4 TAPE
SW25 LW
SW21 DOWN VOLUME
SW17 PAUSE
SW13 START/CUT
SW5 PHONO
SW30 POWER
SW26 ◀◀
SW22 FM
SW18 STOP
SW14 PLAY
SW6 AUX
SW31 AM MW
SW27 ▶▶
SW23 DOWN TUNING
SW19 TUNER REC
SW11 REC PLAY
SW7 CD
C4~11
220PX8
C2
100P
X1
CSB455E81
C3
100P
R2 22K
R1 33K
R5 1
C1
100/6.3
BATTERY
SUM-3X2
D1
D2
D1,2
SE303AX2
or LN66X2
Q1
2SB541(Q,R)
R3 56
R4 22K
Q2
2SD637(R,S)

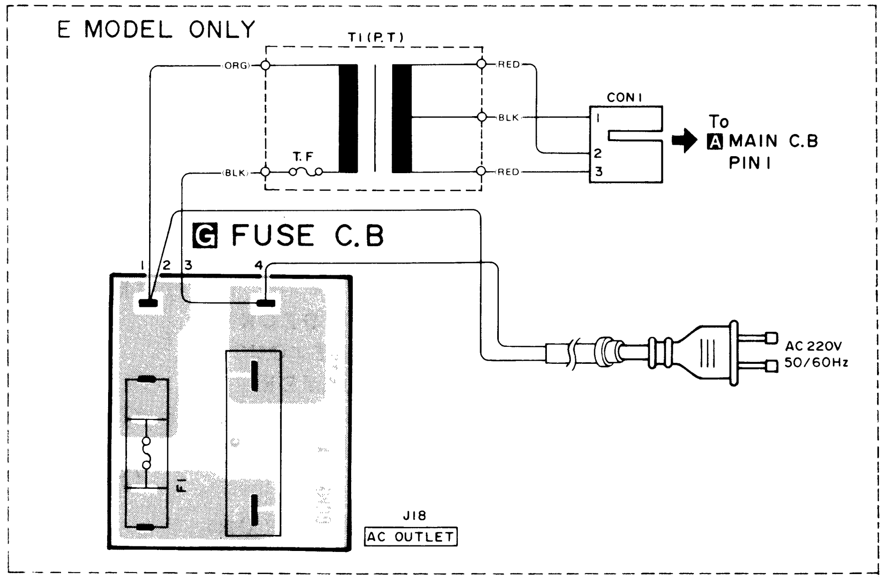

I KEY SWITCH C.B
SW30
SW24
SW27
SW18
SW20
SW7
SW23
SW14
SW6
SW22
SW11
SW21
SW5
SW31
SW13
SW26
SW4
SW25
SW19
SW17
SW28
SW30
POWER
SW24
UP
SW23
DOWN
TUNING
SW27
▶▶
SW18
STOP
SW20
UP
VOLUME
SW21
DOWN
SW7
CD
SW6
AUX
SW22
FM
SW14
PLAY▶
SW11
REV-PLAY◀
SW5
PHONO
SW31
AM MW
(H,U MODELS)
(E,K,G MODELS)
SW13
START/CUT
PHONO
SW26
◀◀
SW4
TAPE
SW25
LW
(E,K,G MODELS)
SW19
TUNER REC
SW17
PAUSE
SW28
MUTING

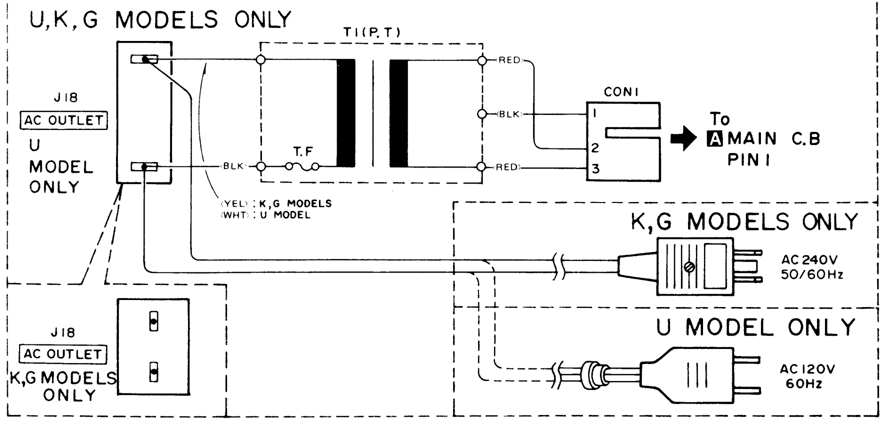

H COMMAND C.B
C9
C8
C7
C6
C5
C4
C10
C11
R4
R2
Q2
R1
R3
R5
D2
D1
C3
C2
Q1
X1
C1
IC1
UR61PB25
RED
BLK
BATTERY
SUM 3X2

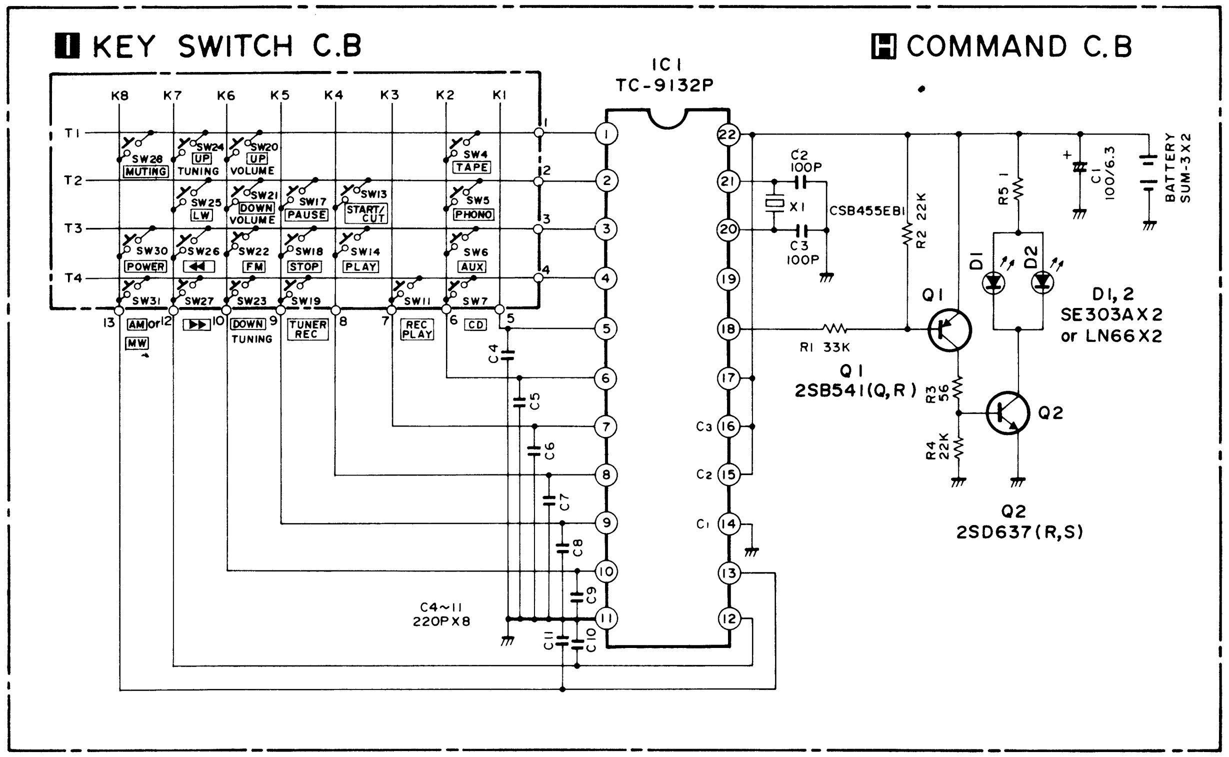
MODEL	COLOR MODEL
H	H,HB
U	UB
E	E,EB
K	K,KB
G	G

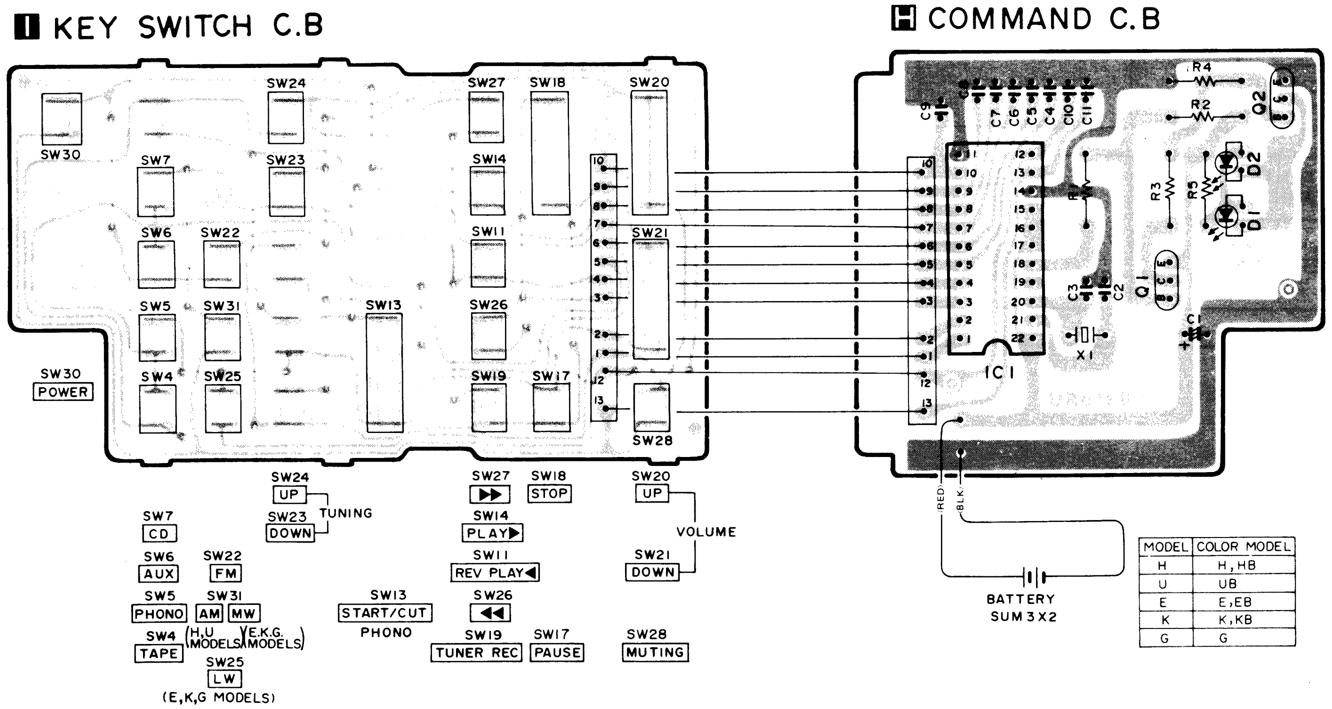

C14
C12
C10
C8
SW2
D62
RED
WHT
BLK
J9
PLAYER SYNC
SIGNAL EARTH
D60 SW2, D62
MUTING
OFF
-20dB


H MODEL ONLY
F SWITCH C.B
SW12
240V
220V
120V
ORG
AC 120V/ 220V/240V 50/60Hz
J18
AC OUTLET
SW12
AC VOLTAGE
T1 (P.T)
YEL
ORG
WHT
BLK
T.F
RED
BLK
RED
CON1
To A MAIN C.B PIN 1


E MODEL ONLY
T1 (P.T)
ORG
BLK
T.F
RED
BLK
RED
CON1
To A MAIN C.B PIN 1
G FUSE C.B
F1
AC 220V 50/60Hz
J18
AC OUTLET


U,K,G MODELS ONLY
T1 (P.T)
J18
AC OUTLET
U MODEL ONLY
BLK
T.F
RED
BLK
RED
CON1
To A MAIN C.B PIN 1
YEL : K,G MODELS
WHT : U MODEL
K,G MODELS ONLY
AC 240V 50/60Hz
U MODEL ONLY
AC 120V 60Hz
J18
AC OUTLET
K,G MODELS ONLY


I KEY SWITCH C.B
H COMMAND C.B
IC1
TC-9132P
K8 K7 K6 K5 K4 K3 K2 K1
T1 T2 T3 T4
SW28 MUTING
SW24 UP TUNING
SW20 UP VOLUME
SW4 TAPE
SW25 LW
SW21 DOWN VOLUME
SW17 PAUSE
SW13 START/CUT
SW5 PHONO
SW30 POWER
SW26 ◀◀
SW22 FM
SW18 STOP
SW14 PLAY
SW6 AUX
SW31 AM or MW
SW27 ▶▶
SW23 DOWN TUNING
SW19 TUNER REC
SW11 REC PLAY
SW7 CD
C4~11 220P X8
C2 100P
C3 100P
X1
CSB455EB1
R2 22K
R5 1
C1 100/6.3
BATTERY SUM-3X2
D1 D2
D1, 2 SE303AX2 or LN66X2
R1 33K
Q1
Q1 2SB541(Q,R)
R3 56
R4 22K
Q2
Q2 2SD637(R,S)


I KEY SWITCH C.B
H COMMAND C.B
SW30
SW24
SW27
SW18
SW20
SW7
SW23
SW14
SW21
SW6
SW22
SW11
SW5
SW31
SW13
SW26
SW4
SW25
SW19
SW17
SW28
SW30 POWER
R4 R2 Q2 R3 R5 D2 D1 Q1 C3 C2 C1 X1 IC1
C9 C7 C6 C5 C4 C10 C11
RED BLK
SW24 UP
SW23 DOWN
TUNING
SW7 CD
SW6 AUX
SW22 FM
SW5 PHONO
SW31 AM MW
SW4 TAPE
(H,U MODELS)(E.K.G. MODELS)
SW25 LW
(E,K,G MODELS)
SW13 START/CUT
PHONO
SW27 ▶▶
SW18 STOP
SW14 PLAY▶
SW11 REV PLAY◀
SW26 ◀◀
SW19 TUNER REC
SW17 PAUSE
SW20 UP
VOLUME
SW21 DOWN
SW28 MUTING
BATTERY SUM3X2

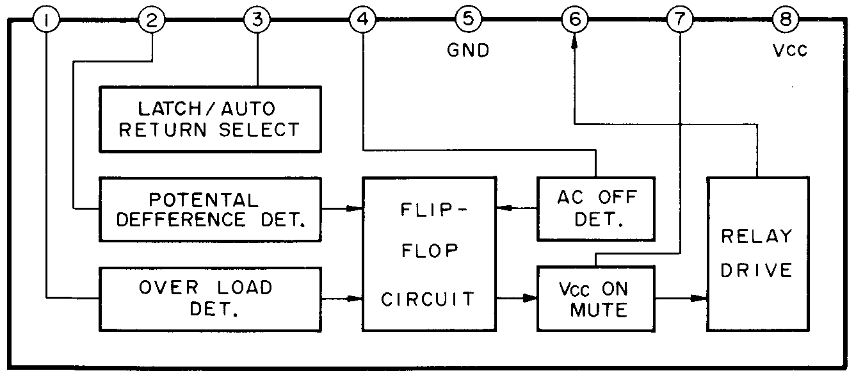
MODEL	COLOR MODEL
H	H, HB
U	UB
E	E, EB
K	K, KB
G	G

Circuit description

- µPC1237H Pin description

Pin No.	Pin names	Function
①	Overload detection	Detection of speaker pins short-circuited
②	Middle point potential detection	Relay OFF at approx 0.6V (BX-110 SP pin ± 2V) (MX-90 SP pin ± 1.5V)
③	Auto-return selection	Auto-return when it is grounded, and non-return when it is connected to the capacitor.
④	AC detection	Set relay to OFF when power switch is set to OFF.
⑤	GND	GND
⑥	Relay drive	Drives protection relay.
⑦	Power ON, MUTE	Time constant circuit pin from the timer power ON until the relay is ON.
⑧	Vcc	+B

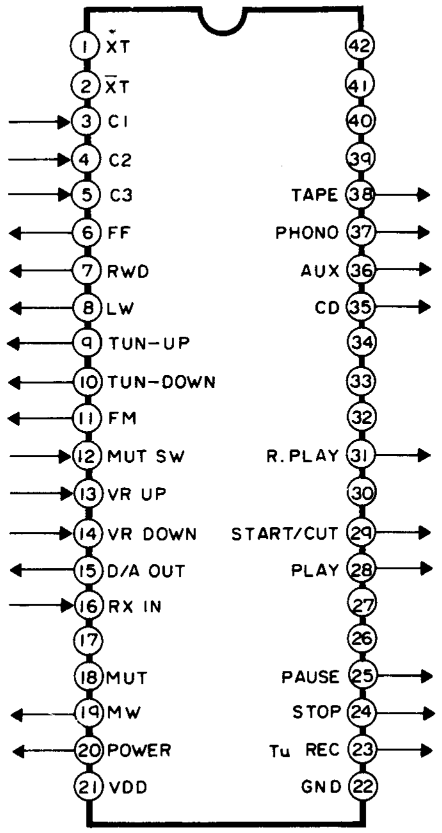
µPC1237H



①
②
③
④
⑤
⑥
⑦
⑧
GND
VCC
LATCH/AUTO RETURN SELECT
POTENTAL DEFFERENCE DET.
OVER LOAD DET.
FLIP-FLOP CIRCUIT
AC OFF DET.
Vcc ON MUTE
RELAY DRIVE

1. DESCRIPTION OF IC TC9134P

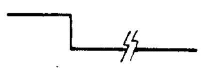
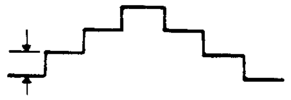
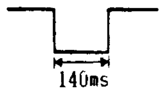
1-1. Pin names



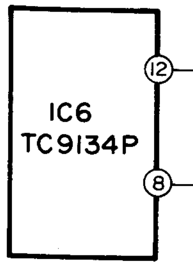
1 XT
2 X̄T
3 C1
4 C2
5 C3
6 FF
7 RWD
8 LW
9 TUN-UP
10 TUN-DOWN
11 FM
12 MUT SW
13 VR UP
14 VR DOWN
15 D/A OUT
16 RX IN
17
18 MUT
19 MW
20 POWER
21 VDD
42
41
40
39
TAPE 38
PHONO 37
AUX 36
CD 35
34
33
32
R.PLAY 31
30
START/CUT 29
PLAY 28
27
26
PAUSE 25
STOP 24
Tu REC 23
GND 22

* The arrows show the signal direction

1-2. Description of pins

<table>
<tr><th>Pin No.</th><th>Pin names</th><th>Function</th></tr>
<tr><td>1, 2</td><td>X_T, $\overline{X_T}$</td><td>Timing oscillator pins. 450kHz</td></tr>
<tr><td>3
4
5</td><td>C_1
C_2
C_3</td><td>0
1
1
Code input pins.
The code of the transmitter and the cords set by these pins are compared, and the input is accepted when they are the same.</td></tr>
<tr><td>6
7
8
9
10
11</td><td>FF(DECK)
RWD(DECK)
LW(TUNER)
UP(TUNER)
DOWN(TUNER)
FM(TUNER)</td><td>Continuout signal output pins.
This output is kept at "LOW" level while the reception signal is input.
5V
0V
</td></tr>
<tr><td>12</td><td>MUT SW</td><td>The MUTE signal output pin 18 is inverted with the MUTE switch input pin set to "LOW" level.</td></tr>
<tr><td>13
14</td><td>VR UP
VR DOWN</td><td>D/A converter external control input pins.
Pin 13 is the volume UP control pin; the voltage at pin 15 is raised when pin 13 is set to "LOW" level.
Pin 14 is the volume DOWN control pin; the voltage at pin 15 drops when pin 14 is set to "LOW" level.</td></tr>
<tr><td>15</td><td>D/A OUT</td><td>Volume control voltage output pin.
The voltage is output by diving V_{DD} by 32.
V_{DD} /32 </td></tr>
<tr><td>16</td><td>Rx, IN</td><td>Reception signal input pin.
This pin inputs the command signal with the carrier signal eliminated.</td></tr>
<tr><td>17</td><td>–</td><td>(Blank pin)</td></tr>
<tr><td>18</td><td>MUT</td><td>MUTE signal output pin.
This is controlled by pin 12.
<table>
<tr><th></th><th>MUT OFF</th><th>MUT ON</th></tr>
<tr><td>IC6.⑫</td><td>HIGH/LOW</td><td>HIGH/LOW</td></tr>
<tr><td>IC6.⑱</td><td>HIGH(3.5V)</td><td>LOW(0V)</td></tr>
<tr><td>IC10.⑯</td><td>LOW(0V)</td><td>HIGH(9V)</td></tr>
</table></td></tr>
<tr><td>19</td><td>MW(TUNER)</td><td>Single-shot signal (single pulse) output pin. When a command signal is input, a "LOW" level pulse is output from only the designated pin.</td></tr>
<tr><td>20</td><td>POWER</td><td></td></tr>
<tr><td>23</td><td>TUNER REC(DECK)</td><td>5V </td></tr>
<tr><td>24</td><td>STOP(DECK)</td><td>0V</td></tr>
<tr><td>25</td><td>PAUSE(DECK)</td><td>140ms</td></tr>
<tr><td>26 ,27</td><td>–</td><td>(Blank pin)</td></tr>
<tr><td>28</td><td>PLAY(DECK)</td><td></td></tr>
<tr><td>29</td><td>START/CUT (PLAYER)</td><td></td></tr>
<tr><td>30</td><td>–</td><td>(Blank pin)</td></tr>
<tr><td>31</td><td>R・PLAY(DECK)</td><td></td></tr>
<tr><td>32~34</td><td>–</td><td>(Blank pin)</td></tr>
<tr><td>35</td><td>CD(FUNCTION)</td><td></td></tr>
<tr><td>36</td><td>AUX(FUNCTION)</td><td></td></tr>
<tr><td>37</td><td>PHONO (FUNCTION)</td><td></td></tr>
<tr><td>38</td><td>TAPE(FUNCTION)</td><td></td></tr>
<tr><td>39~42</td><td>–</td><td>(Blank pin)</td></tr>
<tr><td>21</td><td>V_{DD}</td><td>Power voltage pin.</td></tr>
<tr><td>22</td><td>GND</td><td>GND pin.</td></tr>
</table>

1-3. Descr



IC6
TC9134P
⑫
⑧

1-3-1.

1-3-2.

D by

with the

ON

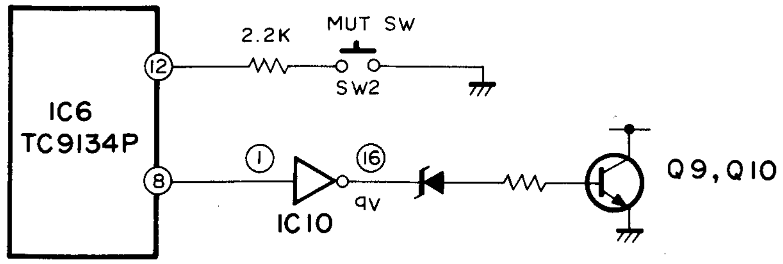
OW

)

V)

utput
, a
only the

1-3. Description of muting


IC6
TC9134P
⑫
⑧
2.2K
MUT SW
SW2
①
⑯
9V
IC10
Q9,Q10

	MUT OFF	MUT ON
IC6 ⑫	HIGH/LOW	HIGH/LOW
IC6 ⑱	HIGH(3.5V)	LOW(0V)
IC10 ⑯	LOW (0V)	HIGH(9V)

1-3-1. Description of pins and SW2

SW2 ... This is a non-locking switch; pin ⑫ is set to "LOW" level (0V) only when this switch is pressed.

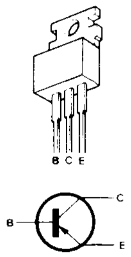
Pin ⑫ ... This is the pin ⑱ control pin and is set to "HIGH" level (5V) in general; pin ⑱ is changed over "HIGH" level → "LOW" level → "HIGH" level → "LOW" level ... every time this pin is set to "LOW" level.

Pin ⑱ ... The inside of pin ⑱ is flip-flop circuit. and is changed "HIGH" level → "LOW" level → "HIGH" level → "LOW" level ... every time pin ⑫ is set to "LOW" level.

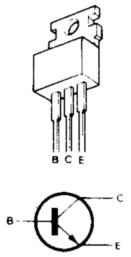
1-3-2. Description of MUTE operation

Pin ⑱ is set to "HIGH" level at first(when the AC cord is plugged). and in the MUTE OFF mode. When the MUTE switch is pressed to set pin ⑫ to "LOW" level ($\frac{5V}{0V}$ ‾‾__‾‾). pin ⑱ is set to the "LOW" level and the unit enters the MUTE ON mode.
When the MUTE switch pressed then. pin ⑱ is set to "HIGH" level and the unit enters the MUTE OFF mode.

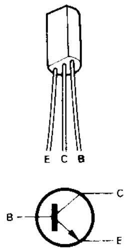
* When the remote control operation is performed. pin ⑱ is set to "HIGH" level and "LOW" level alternately every time the MUTE button is pressed.



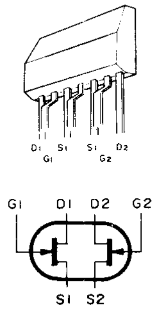
2SB941



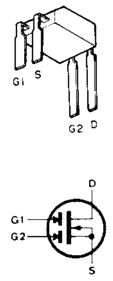
2SD1265



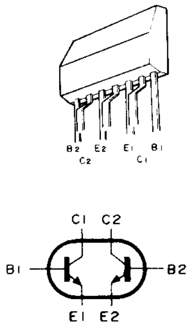
2SC2632


D1 S1 S2 D2
G1 G2
G1 D1 D2 G2
S1 S2

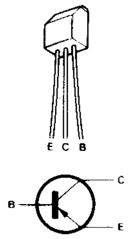
2SK389


G1 S
G2 D
D
G1
G2
S

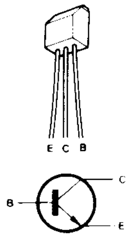
3SK73


B2 E2 E1 B1
C2 C1
C1 C2
B1
B2
E1 E2

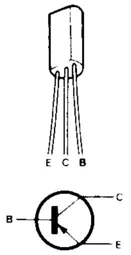
2SC3381



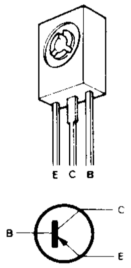
2SB605



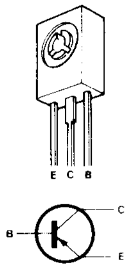
2SD571



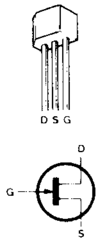
2SA1124



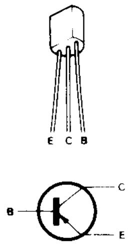
2SA1358



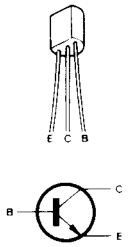
2SC1846
2SC3421



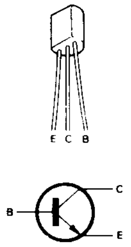
2SK161
2SK246



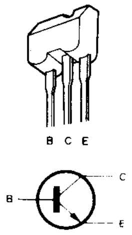
2SA733
2SA1015



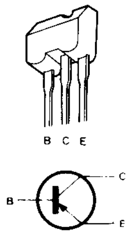
2SC1815
2SC1923
2SC2001



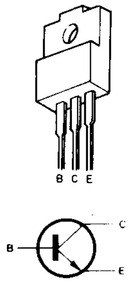
2SD1302



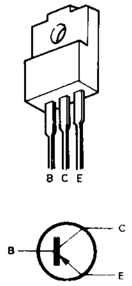
2SD637



2SB641

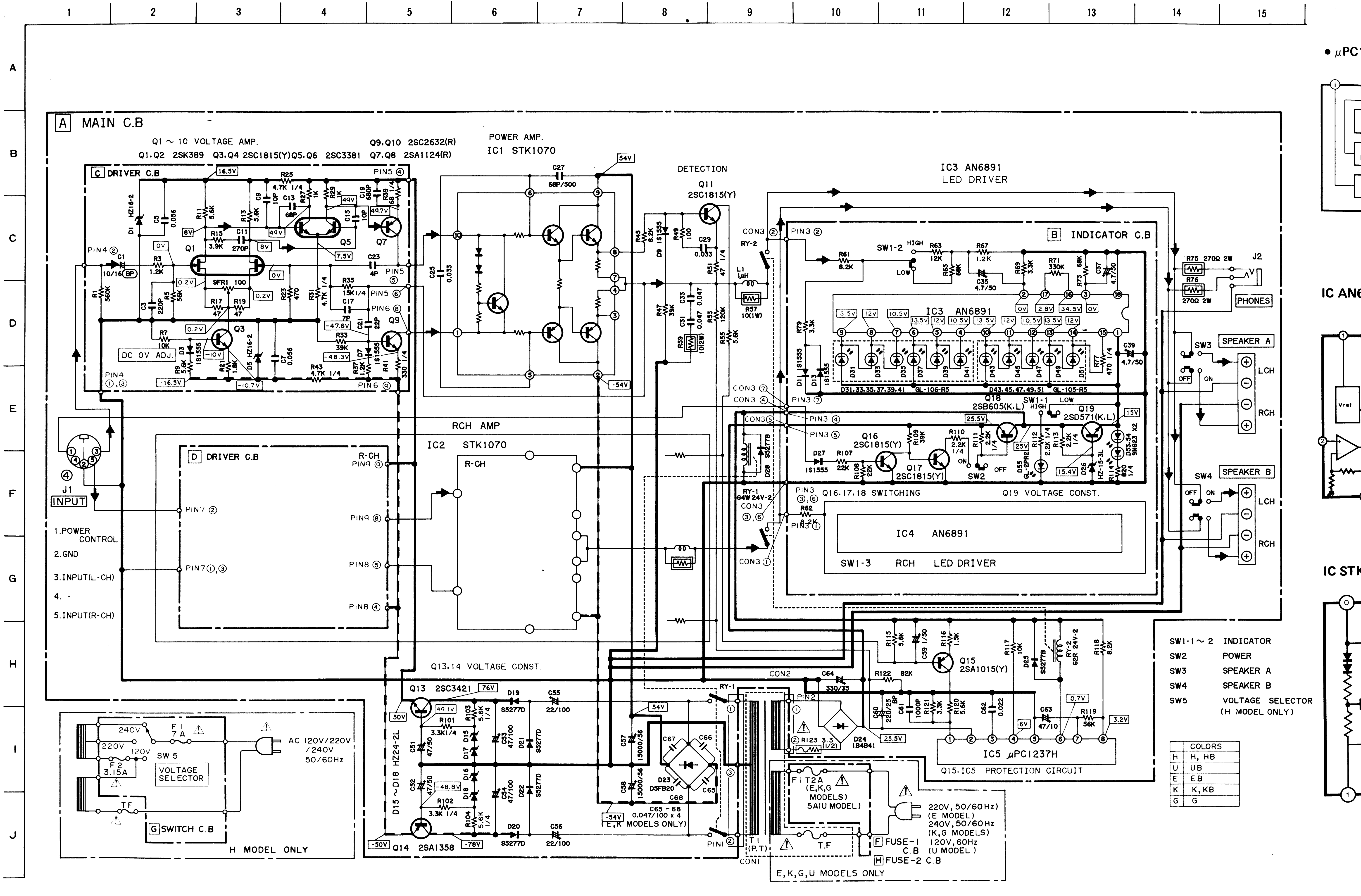


2SD1406



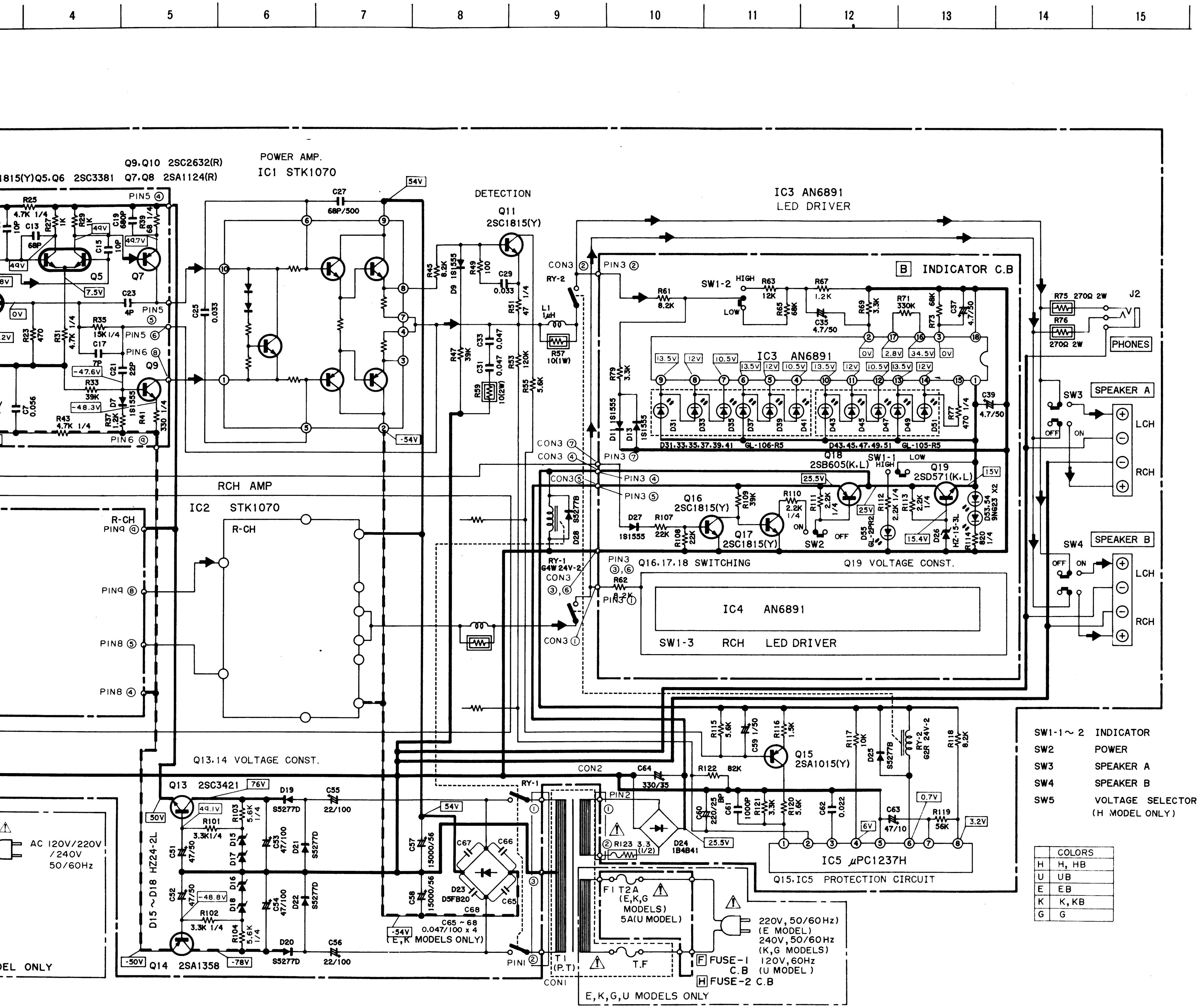
2SB1015

SCHEMATIC DIAGRAM (BX-110)


A MAIN C.B
Q1 ~ 10 VOLTAGE AMP.
Q1,Q2 2SK389 Q3,Q4 2SC1815(Y) Q5,Q6 2SC3381
Q9,Q10 2SC2632(R) Q7,Q8 2SA1124(R)
POWER AMP.
IC1 STK1070
DETECTION
Q11 2SC1815(Y)
IC3 AN6891
LED DRIVER
C DRIVER C.B
B INDICATOR C.B
D DRIVER C.B
RCH AMP
IC2 STK1070
R-CH
IC4 AN6891
SW1-3 RCH LED DRIVER
Q16,17,18 SWITCHING
Q19 VOLTAGE CONST.
Q16 2SC1815(Y)
Q17 2SC1815(Y)
Q18 2SB605(K,L)
Q19 2SD571(K,L)
Q13,14 VOLTAGE CONST.
Q13 2SC3421
Q14 2SA1358
D15 ~ D18 HZ24-2L
Q15 2SA1015(Y)
IC5 μPC1237H
Q15,IC5 PROTECTION CIRCUIT
DC 0V ADJ.
J1 INPUT
1.POWER CONTROL
2.GND
3.INPUT(L-CH)
4. -
5.INPUT(R-CH)
J2 PHONES
SPEAKER A
SPEAKER B
LCH
RCH
SW3
SW4
G SWITCH C.B
SW 5 VOLTAGE SELECTOR
240V
220V
120V
F1 7A
F2 3.15A
TF
AC 120V/220V/240V 50/60Hz
H MODEL ONLY
T1 (P.T)
CON1
CON2
RY-1
RY-2
F1 T2A (E,K,G MODELS) 5A(U MODEL)
T.F
220V, 50/60Hz (E MODEL)
240V, 50/60Hz (K,G MODELS)
120V, 60Hz (U MODEL)
F FUSE-1 C.B
H FUSE-2 C.B
E,K,G,U MODELS ONLY
C65 ~ 68 0.047/100 x 4 (E,K MODELS ONLY)
D23 D5FB20
D24 1B4B41
54V
-54V
76V
-78V
50V
-50V
16.5V
-16.5V
IC ANE
IC STK
μPC1

SW1-1 ~ 2	INDICATOR
SW2	POWER
SW3	SPEAKER A
SW4	SPEAKER B
SW5	VOLTAGE SELECTOR (H MODEL ONLY)

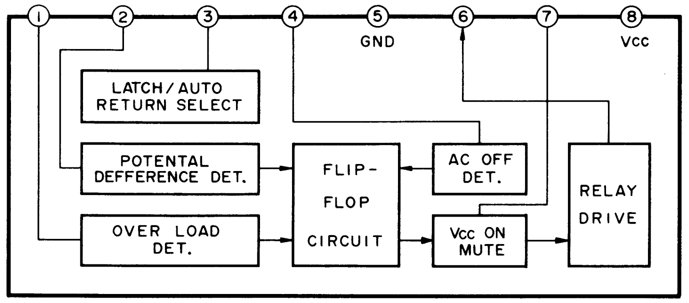
	COLORS
H	H, HB
U	UB
E	EB
K	K, KB
G	G


4
5
6
7
8
9
10
11
12
13
14
15
POWER AMP.
IC1 STK1070
815(Y)Q5,Q6 2SC3381
Q9,Q10 2SC2632(R)
Q7,Q8 2SA1124(R)
DETECTION
Q11
2SC1815(Y)
IC3 AN6891
LED DRIVER
B INDICATOR C.B
SW1-2
HIGH
LOW
R61 8.2K
R63 12K
R65 68K
R67 1.2K
C35 4.7/50
R69 3.3K
R71 330K
R73 68K
C37 4.7/50
IC3 AN6891
D31,33,35,37,39,41 GL-106-R5
D43,45,47,49,51 GL-105-R5
R75 270Ω 2W
R76 270Ω 2W
J2
PHONES
SW3
SPEAKER A
LCH
RCH
OFF
ON
SW4
SPEAKER B
CON3
RY-2
L1 1μH
R57 10(1W)
PIN3
PIN5
PIN6
PIN8
PIN9
54V
-54V
49V
49.7V
7.5V
-47.6V
-48.3V
R25 4.7K 1/4
C13 68P
C15 10P
C19 680P
C23 4P
C25 0.033
C27 68P/500
C29 0.033
C31 0.047
C33 0.047
R45 8.2K
R47 39K
R49 100
R51 47 1/4
R53 120K
R55 5.6K
R59 10(2W)
D9 1S1555
D11 1S1555
D13 1S1555
R79 3.3K
Q5
Q7
Q9
RCH AMP
IC2 STK1070
R-CH
Q18 2SB605(K,L)
Q19 2SD571(K,L)
Q16 2SC1815(Y)
Q17 2SC1815(Y)
SW1-1
SW2
ON
OFF
25.5V
15V
15.4V
25V
D27 1S1555
R107 22K
R108 22K
R109 39K
R110 2.2K 1/4
R111 2.2K 1/4
R112 2.2K 1/4
R113 2.2K 1/4
R114 820 1/4
D26 HZ-15-3L
D53,54 9NG23 X2
D55 GL-2PR2
RY-1 G4W 24V-2
D28 S5277B
Q16,17,18 SWITCHING
Q19 VOLTAGE CONST.
R62 8.2K
IC4 AN6891
SW1-3 RCH LED DRIVER
R77 470 1/4
C39 4.7/50
Q13,14 VOLTAGE CONST.
Q13 2SC3421
Q14 2SA1358
76V
-78V
49.1V
-48.8V
50V
-50V
R101 3.3K 1/4
R102 3.3K 1/4
R103 5.6K 1/4
R104 5.6K 1/4
D15~D18 HZ24-2L
D19 S5277D
D20 S5277D
D21 S5277D
D22 S5277D
C51 47/50
C52 47/50
C53 47/100
C54 47/100
C55 22/100
C56 22/100
C57 15000/56
C58 15000/56
C65~68 0.047/100 x 4
D23 D5FB20
(E,K MODELS ONLY)
AC 120V/220V/240V 50/60Hz
DEL ONLY
CON2
CON1
RY-1
PIN1
PIN2
T1 (P.T)
T.F
F1 T2A (E,K,G MODELS) 5A(U MODEL)
F FUSE-1 C.B
H FUSE-2 C.B
220V,50/60Hz (E MODEL)
240V,50/60Hz (K,G MODELS)
120V,60Hz (U MODEL)
E,K,G,U MODELS ONLY
C64 330/35
R122 82K
R123 3.3 (1/2)
C60 220/25 BP
C61 1000P
R121 3.3K
R120 5.6K
R115 5.6K
C59 1/50
R116 1.3K
Q15 2SA1015(Y)
R117 10K
D25 S5277B
RY-2 G2R 24V-2
R118 8.2K
C62 0.022
C63 47/10
R119 56K
D24 1B4B41
0.7V
6V
3.2V
25.5V
IC5 μPC1237H
Q15,IC5 PROTECTION CIRCUIT

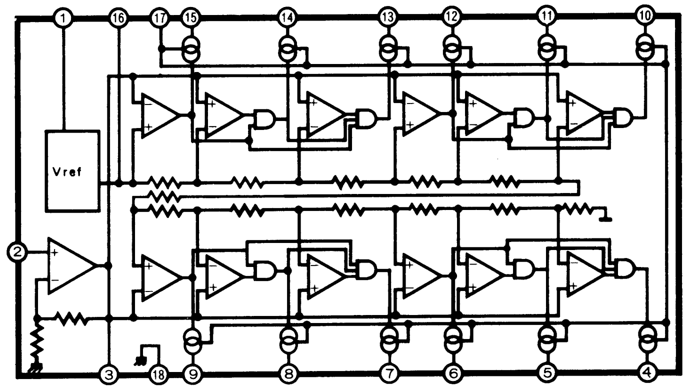
SW1-1～2	INDICATOR
SW2	POWER
SW3	SPEAKER A
SW4	SPEAKER B
SW5	VOLTAGE SELECTOR (H MODEL ONLY)

	COLORS
H	H, HB
U	UB
E	EB
K	K, KB
G	G

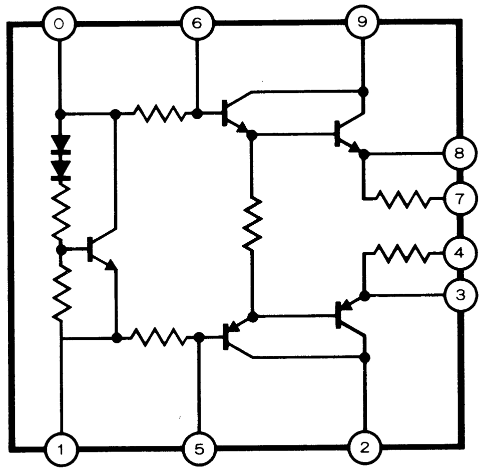
- μPC1237H


1
2
3
4
5
6
7
8
GND
Vcc
LATCH/AUTO RETURN SELECT
POTENTAL DEFFERENCE DET.
OVER LOAD DET.
FLIP-FLOP CIRCUIT
AC OFF DET.
Vcc ON MUTE
RELAY DRIVE

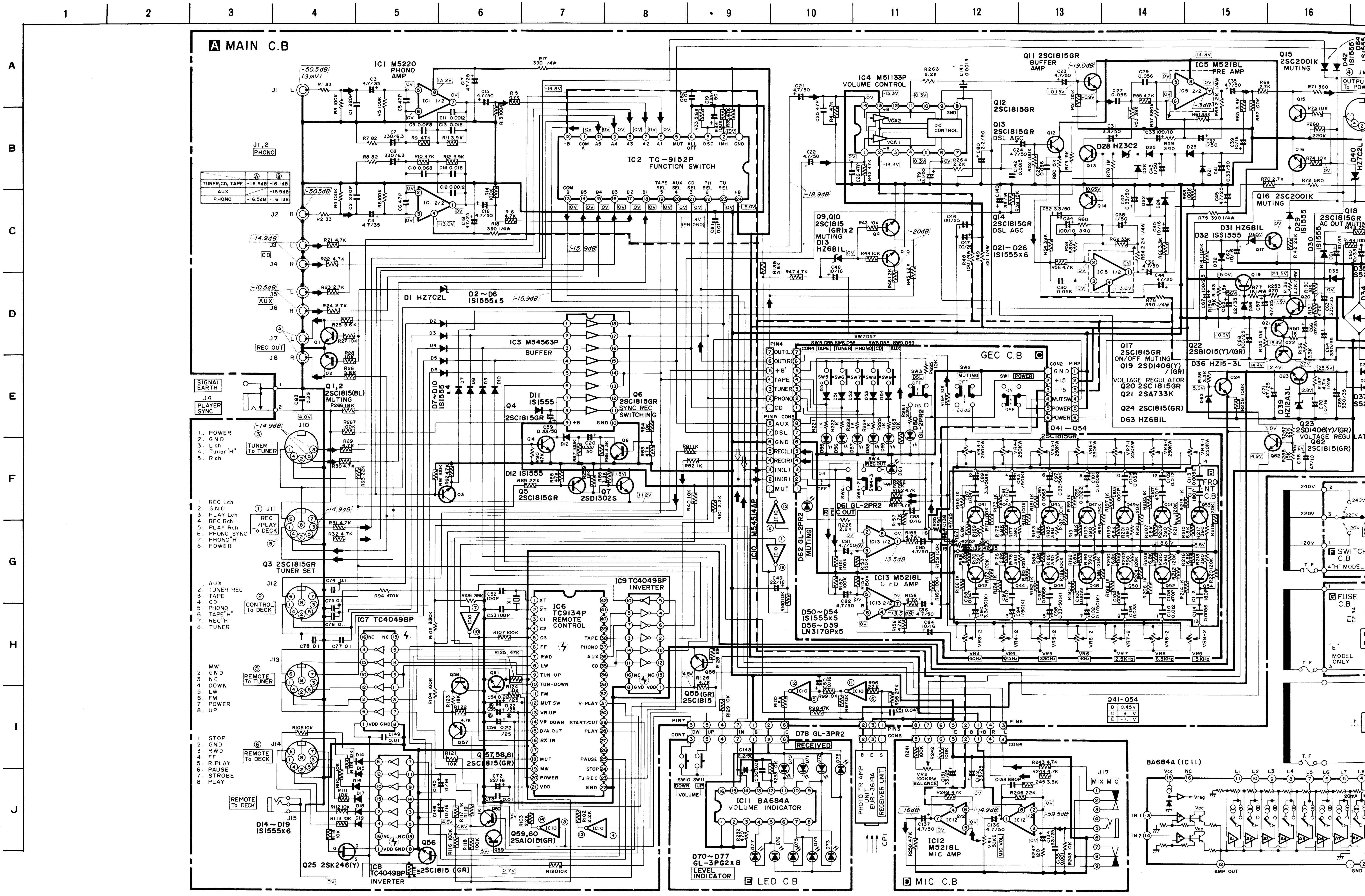
IC AN6891

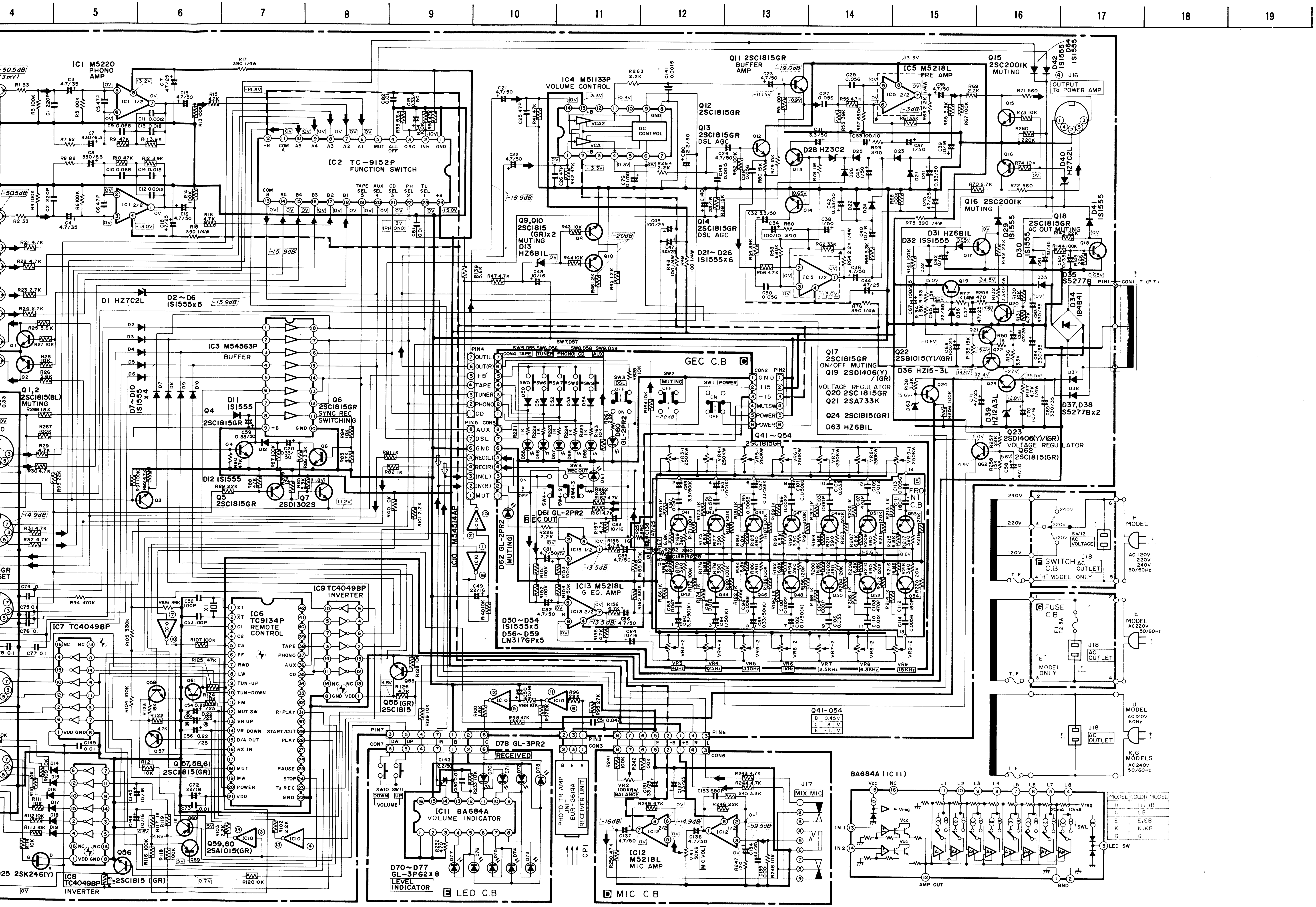

1
16
17
15
14
13
12
11
10
2
Vref
3
18
9
8
7
6
5
4

IC STK1070


0
6
9
8
7
4
3
1
5
2

SCHEMATIC DIAGRAM (GX-110)

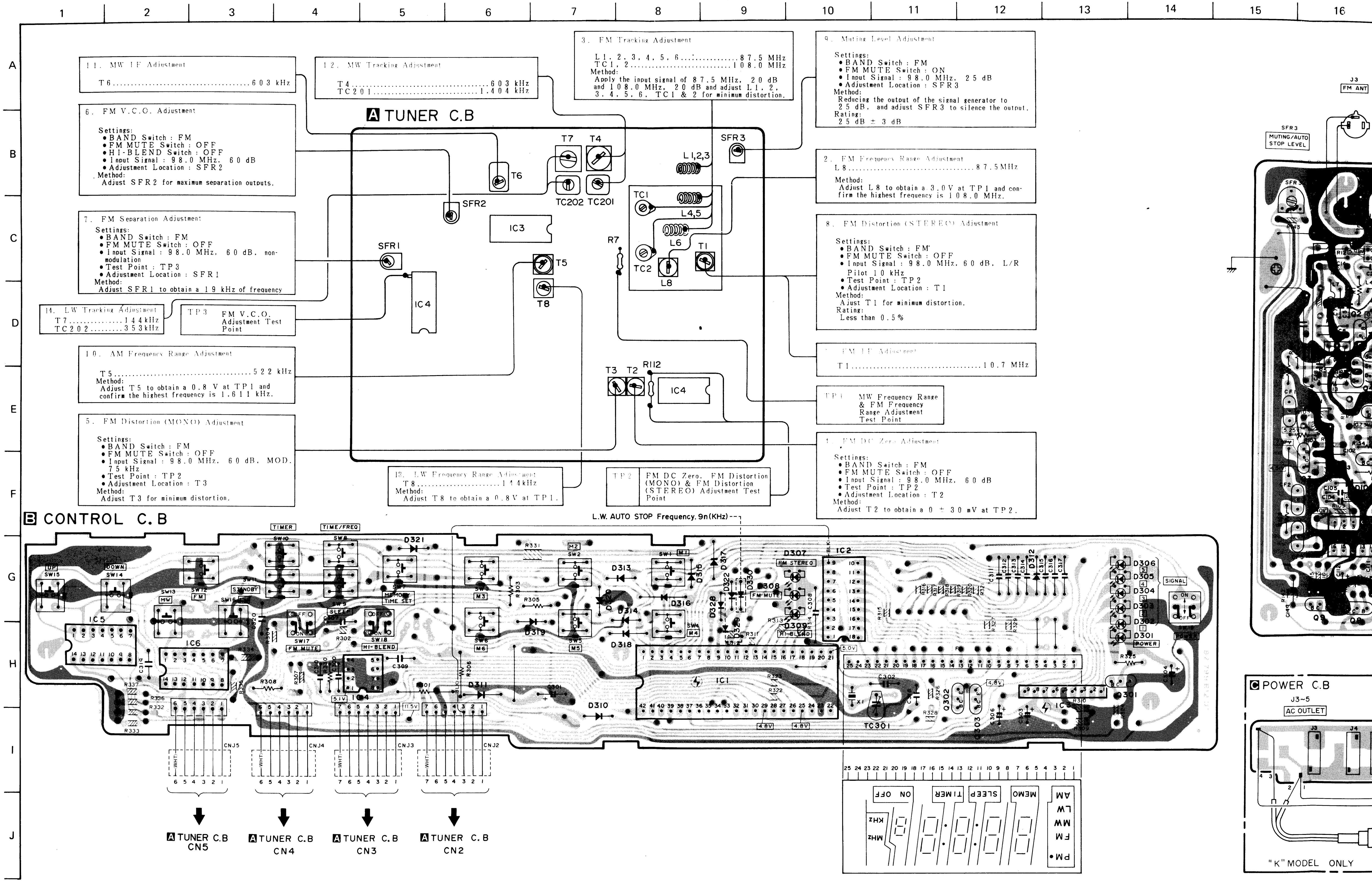

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A MAIN C.B
IC1 M5220 PHONO AMP
IC2 TC-9152P FUNCTION SWITCH
IC3 M54563P BUFFER
IC4 M51133P VOLUME CONTROL
IC5 M5218L PRE AMP
IC6 TC9134P REMOTE CONTROL
IC7 TC4049BP
IC8 TC4049BP INVERTER
IC9 TC4049BP INVERTER
IC10 M54514AP
IC11 BA684A VOLUME INDICATOR
IC12 M5218L MIC AMP
IC13 M5218L G EQ AMP
J1,2 PHONO
J3 CD J4
J5 AUX J6
J7 REC OUT J8
J9 PLAYER SYNC
SIGNAL EARTH
Q1,2 2SC1815(BL) MUTING
Q3 2SC1815GR TUNER SET
Q4 2SC1815GR
Q5 2SC1815GR
Q6 2SC1815GR SYNC REC SWITCHING
Q7 2SD1302S
Q9,Q10 2SC1815 (GR)x2 MUTING
D13 HZ6BIL
Q11 2SC1815GR BUFFER AMP
Q12 2SC1815GR
Q13 2SC1815GR DSL AGC
Q14 2SC1815GR DSL AGC
D21~D26 1S1555x6
D28 HZ3C2
Q15 2SC2001K MUTING
Q16 2SC2001K MUTING
Q17 2SC1815GR ON/OFF MUTING
Q18 2SC1815GR AC OUT MUTING
Q19 2SD1406(Y)/(GR)
VOLTAGE REGULATOR
Q20 2SC1815GR
Q21 2SA733K
Q22 2SB1015(Y)/(GR)
Q23 2SD1406(Y)/(GR) VOLTAGE REGULATOR
Q24 2SC1815(GR)
D31 HZ6BIL
D32 1S1555
D36 HZ15-3L
D39 HZ12A3L
D40 HZ7C2L
D63 HZ6BIL
Q62 2SC1815(GR)
D1 HZ7C2L
D2~D6 1S1555x5
D7~D10 1S1555 x4
D11 1S1555
D12 1S1555
D14~D19 1S1555x6
Q25 2SK246(Y)
Q55 (GR) 2SC1815
Q56 2SC1815 (GR)
Q57,58,61 2SC1815(GR)
Q59,60 2SA1015(GR)
D50~D54 1S1555x5
D56~D59 LN317GPx5
D60 GL-2PR2
D61 GL-2PR2
D62 GL-2PR2 MUTING
D70~D77 GL-3PG2x8 LEVEL INDICATOR
D78 GL-3PR2 RECEIVED
GEC C.B C
SW1 POWER
SW2 MUTING
SW3 DSL
SW4 REC OUT
SW5 TAPE SW6 TUNER SW7 PHONO SW8 CD SW9 AUX
Q41~Q54 2SC1815GR
B FRONT C.B
VR3 40Hz
VR4 125Hz
VR5 330Hz
VR6 1KHz
VR7 2.5KHz
VR8 6.3KHz
VR9 15KHz
E LED C.B
D MIC C.B
J17 MIX MIC
PHOTO TR AMP UNIT EUR-3619A
RECEIVER UNIT
CP1
SW10 DOWN
SW11 UP
VOLUME
VR2 100KΩ BALANCE
F SWITCH C.B
4"H" MODEL
G FUSE C.B
"E" MODEL ONLY
240V
220V
120V
BA684A (IC11)
J10 ③ TUNER To TUNER
1. POWER
2. GND
3. L ch
4. Tuner "H"
5. R ch
J11 ① REC/PLAY To DECK
1. REC Lch
2. GND
3. PLAY Lch
4. REC Rch
5. PLAY Rch
6. PHONO SYNC
7. PHONO "H"
8. POWER
J12 ② CONTROL To DECK
1. AUX
2. TUNER REC
3. TAPE
4. CD
5. PHONO
6. TAPE "H"
7. REC "H"
8. TUNER
J13 ⑤ REMOTE To TUNER
1. MW
2. GND
3. NC
4. DOWN
5. LW
6. FM
7. POWER
8. UP
J14 ⑥ REMOTE To DECK
1. STOP
2. GND
3. RWD
4. FF
5. R PLAY
6. PAUSE
7. STROBE
8. PLAY
J15 REMOTE To DECK
OUTPUT To POWER
	Ⓐ	Ⓑ
TUNER,CD,TAPE	-16.5dB	-16.1dB
AUX		-15.9dB
PHONO	-16.5dB	-16.1dB
Q41~Q54
B 0.45V
C 8.1V
E -1.1V


4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
IC1 M5220 PHONO AMP
IC2 TC-9152P FUNCTION SWITCH
IC3 M54563P BUFFER
IC4 M51133P VOLUME CONTROL
IC5 M5218L PRE AMP
Q11 2SC1815GR BUFFER AMP
Q12 2SC1815GR
Q13 2SC1815GR DSL AGC
Q14 2SC1815GR DSL AGC
D21~D26 1S1555x6
D28 HZ3C2
Q15 2SC2001K MUTING
Q16 2SC2001K MUTING
Q18 2SC1815GR AC OUT MUTING
J16
OUTPUT To POWER AMP
D40 HZ7C2L
D41 1S1555
D42 1S1555
D64 1S1555
Q9,Q10 2SC1815 (GR)x2 MUTING
D13 HZ6B1L
D1 HZ7C2L
D2~D6 1S1555x5
D7~D10 1S1555 x4
D11 1S1555
Q4 2SC1815GR
Q6 2SC1815GR SYNC REC SWITCHING
D12 1S1555
Q5 2SC1815GR
Q7 2SD1302S
Q1,2 2SC1815(BL) MUTING
GEC C.B
SW1 POWER
SW2 MUTING
SW3 DSL
SW4 REC OUT
Q17 2SC1815GR ON/OFF MUTING
Q19 2SD1406(Y)/(GR)
VOLTAGE REGULATOR
Q20 2SC1815GR
Q21 2SA733K
Q24 2SC1815(GR)
D63 HZ6B1L
Q22 2SB1015(Y)/(GR)
D36 HZ15-3L
D31 HZ6B1L
D32 1SS1555
D35 S5277B
D34 1B4B41
D37,D38 S5277Bx2
D39 HZ12A3L
Q23 2SD1406(Y)/(GR) VOLTAGE REGULATOR
Q62 2SC1815(GR)
Q41~Q54 2SC1815GR
FRONT C.B
IC13 M5218L G EQ. AMP
D50~D54 1S1555x5
D56~D59 LN317GPx5
D60 GL-2PR2
D61 GL-2PR2
REC OUT
D62 GL-2PR2 MUTING
IC10 M54514AP
IC6 TC9134P REMOTE CONTROL
IC9 TC4049BP INVERTER
IC7 TC4049BP
IC8 TC4049BP INVERTER
Q56 2SC1815 (GR)
Q25 2SK246(Y)
Q57,58,61 2SC1815(GR)
Q59,60 2SA1015(GR)
Q55 (GR) 2SC1815
D78 GL-3PR2
RECEIVED
IC11 BA684A VOLUME INDICATOR
D70~D77 GL-3PG2x8
LEVEL INDICATOR
E LED C.B
PHOTO TR AMP UNIT EUR-3614A
RECEIVER UNIT
CP1
IC12 M5218L MIC AMP
D MIC C.B
J17 MIX MIC
BA684A (IC11)
F SWITCH C.B
'H MODEL ONLY
G FUSE C.B
E MODEL ONLY
H MODEL AC 120V 220V 240V 50/60Hz
E MODEL AC220V 50/60Hz
U MODEL AC120V 60Hz
K,G MODELS AC240V 50/60Hz
J18 AC OUTLET
SW12 AC VOLTAGE
VR3 40Hz
VR4 125Hz
VR5 330Hz
VR6 1KHz
VR7 2.5KHz
VR8 6.3KHz
VR9 15KHz
Q41~Q54
B 0.45V
C 8.1V
E -1.1V
MODEL COLOR MODEL
H H,HB
U UB
E E,EB
K K,KB
G G

NOTES (1) ▩ Earth pattern ▨ Printed resistor pattern · Component side pattern ▒ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.

WIRING (TX-110 E, K)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A TUNER C.B
T6
T7
T4
TC202
TC201
SFR2
SFR3
L1,2,3
TC1
L4,5
L6
TC2
L8
T1
IC3
SFR1
R7
T5
T8
IC4
T3
T2
R112
IC4
B CONTROL C.B
TIMER
TIME/FREQ
UP
DOWN
SW15
SW14
SW13
MW
SW12
FM
STANDBY
SW16
SW10
SW8
SW11
SW7
MEMORY TIME SET
SLEEP
SW9
SW17
FM MUTE
SW18
HI-BLEND
D321
R331
M2
SW2
M3
M6
M5
SW5
SW1
M1
SW4
M4
D313
D314
D315
D316
D317
D318
D319
D320
D322
D328
D329
D330
D307
FM STEREO
D308
FM MUTE
D309
HI-BLEND
IC2
BLK
IC1
IC5
IC6
IC4
IC3
D310
D311
D312
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
ON
OFF
TC301
X1
Q301
Q302
Q303
5.0V
4.8V
5.1V
11.5V
R301
R302
R303
R305
R306
R307
R308
R311
R313
R315
R322
R323
R325
R326
R327
R328
R332
R333
R334
R336
R337
C302
C303
C308
C309
C311
C312
C313
C314
C316
C317
CNJ5
CNJ4
CNJ3
CNJ2
WHT
6 5 4 3 2 1
7 6 5 4 3 2 1
L.W. AUTO STOP Frequency. 9n(KHz)
25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
ON OFF
TIMER
SLEEP
MEMO
AM
LW
MW
FM
PM
KHz
MHz
J3
FM ANT
SFR3
MUTING/AUTO STOP LEVEL
C POWER C.B
J3~5
AC OUTLET
J3
J4
"K" MODEL ONLY

A TUNER C.B CN5

A TUNER C.B CN4

A TUNER C.B CN3

A TUNER C.B CN2

11. MW IF Adjustment

T6 .... 603 kHz

6. FM V.C.O. Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- HI-BLEND Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Adjustment Location : SFR2

Method:
Adjust SFR2 for maximum separation outputs.

7. FM Separation Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, non-modulation
- Test Point : TP3
- Adjustment Location : SFR1

Method:
Adjust SFR1 to obtain a 19 kHz of frequency

14. LW Tracking Adjustment

T7 .... 144 kHz
TC202 .... 353 kHz

TP3 FM V.C.O. Adjustment Test Point

10. AM Frequency Range Adjustment

T5 .... 522 kHz

Method:
Adjust T5 to obtain a 0.8 V at TP1 and confirm the highest frequency is 1,611 kHz.

5. FM Distortion (MONO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, MOD. 75 kHz
- Test Point : TP2
- Adjustment Location : T3

Method:
Adjust T3 for minimum distortion.

12. MW Tracking Adjustment

T4 .... 603 kHz
TC201 .... 1,404 kHz

13. LW Frequency Range Adjustment

T8 .... 144 kHz

Method:
Adjust T8 to obtain a 0.8 V at TP1.

TP2	FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6 .... 87.5 MHz
TC1, 2 .... 108.0 MHz

Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.

Rating:
25 dB ± 3 dB

2. FM Frequency Range Adjustment

L8 .... 87.5 MHz

Method:
Adjust L8 to obtain a 3.0 V at TP1 and confirm the highest frequency is 108.0 MHz.

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R Pilot 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.

Rating:
Less than 0.5%

FM IF Adjustment

T1 .... 10.7 MHz

TP1 MW Frequency Range & FM Frequency Range Adjustment Test Point

1. FM DC Zero Adjustment

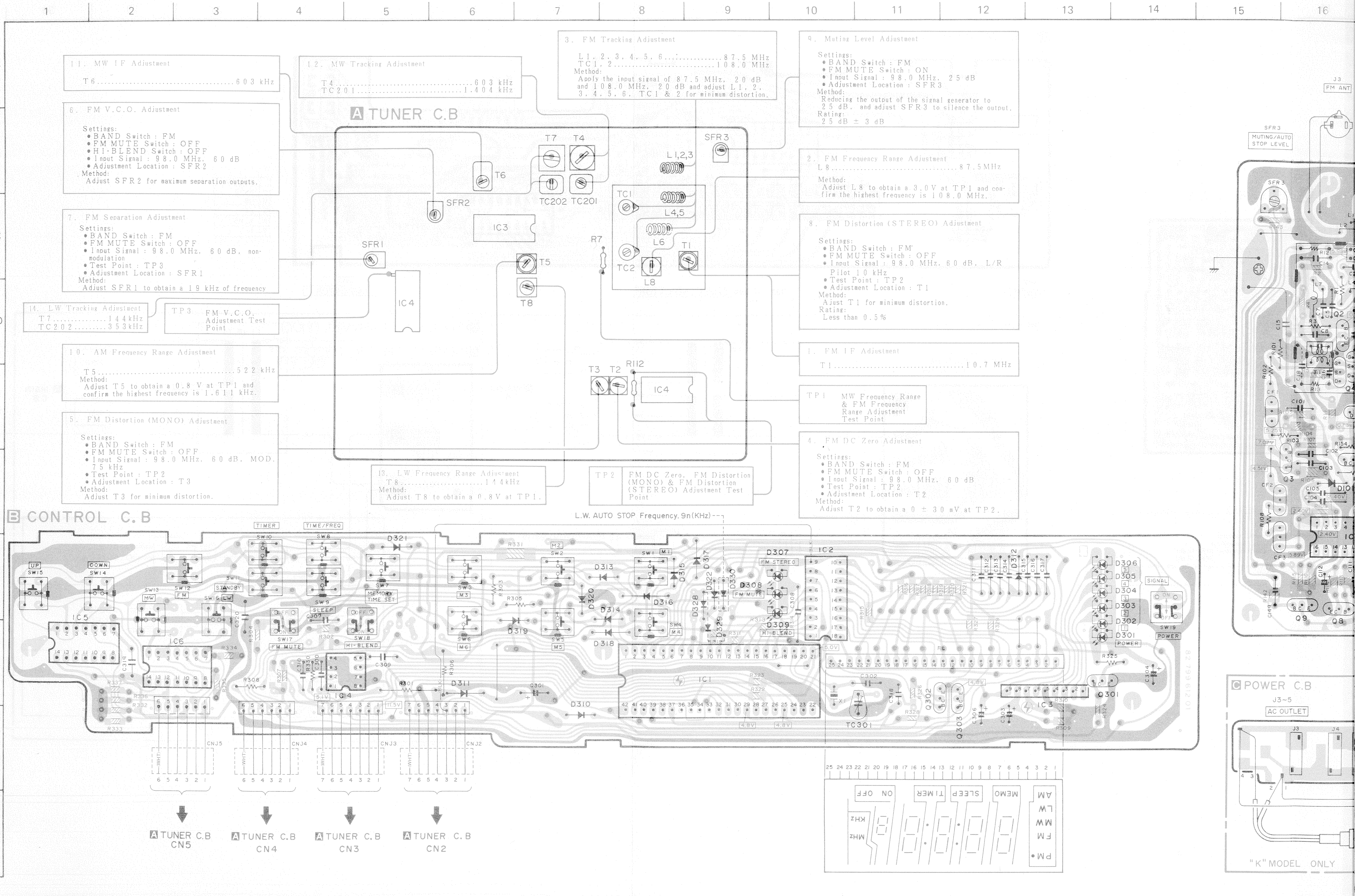
Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

Method:
Adjust T2 to obtain a 0 ± 30 mV at TP2.

NOTES (1) ▨ Earth pattern ▨ Printed resistor pattern · Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But (   ) is with AM reception.

WIRING (TX-110 E, K)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A TUNER C.B
T7
T4
T6
SFR3
L1,2,3
SFR2
TC202
TC201
TC1
L4,5
IC3
R7
L6
T1
SFR1
TC2
L8
T5
IC4
T8
T3
T2
R112
IC4
J3
FM ANT
SFR3
MUTING/AUTO STOP LEVEL
B CONTROL C.B
L.W. AUTO STOP Frequency. 9n(KHz)
TIMER
TIME/FREQ
SW10
SW8
D321
R331
M2
SW2
SW1
M1
D317
D307
FM STEREO
IC2
D312
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
SW19
POWER
UP
SW15
DOWN
SW14
SW13
MW
SW12
FM
SW11
STANDBY
SW16
LW
SW9
SLEEP
SW7
MEMORY
TIME SET
SW3
M3
D313
D315
D322
D320
D308
FM MUTE
D316
D314
D328
D329
D309
HI-BLEND
SW4
M4
SW17
FM MUTE
SW18
HI-BLEND
SW6
M6
SW5
M5
D319
D318
IC5
IC6
IC1
IC4
D311
D310
C301
TC301
Q302
Q303
IC3
Q301
R325
5.0V
5.1V
11.5V
4.8V
CNJ5
CNJ4
CNJ3
CNJ2
WHT
A TUNER C.B CN5
A TUNER C.B CN4
A TUNER C.B CN3
A TUNER C.B CN2
ON OFF
TIMER
SLEEP
MEMO
AM
LW
MW
FM
PM
KHz
MHz
C POWER C.B
J3~5
AC OUTLET
J3
J4
"K" MODEL ONLY
Q9
Q8
D101
CF1
CF2
CF3
R101
R102
R108
C101
C102
C103
Q3
Q2

11. MW IF Adjustment

T6 .... 603 kHz

12. MW Tracking Adjustment

T4 .... 603 kHz
TC201 .... 1.404 kHz

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6 .... 87.5 MHz
TC1, 2 .... 108.0 MHz
Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.
Rating:
25 dB ± 3 dB

6. FM V.C.O. Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- HI-BLEND Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Adjustment Location : SFR2

Method:
Adjust SFR2 for maximum separation outputs.

2. FM Frequency Range Adjustment

L8 .... 87.5 MHz

Method:
Adjust L8 to obtain a 3.0 V at TP1 and confirm the highest frequency is 108.0 MHz.

7. FM Separation Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, non-modulation
- Test Point : TP3
- Adjustment Location : SFR1

Method:
Adjust SFR1 to obtain a 19 kHz of frequency

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R Pilot 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.
Rating:
Less than 0.5%

14. LW Tracking Adjustment

T7 .... 144 kHz
TC202 .... 353 kHz

TP3 FM V.C.O. Adjustment Test Point

10. AM Frequency Range Adjustment

T5 .... 522 kHz
Method:
Adjust T5 to obtain a 0.8 V at TP1 and confirm the highest frequency is 1,611 kHz.

1. FM IF Adjustment

T1 .... 10.7 MHz

TP1 MW Frequency Range & FM Frequency Range Adjustment Test Point

5. FM Distortion (MONO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, MOD. 75 kHz
- Test Point : TP2
- Adjustment Location : T3

Method:
Adjust T3 for minimum distortion.

4. FM DC Zero Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

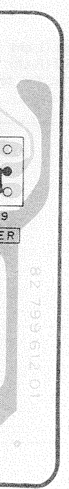
Method:
Adjust T2 to obtain a 0 ± 30 mV at TP2.

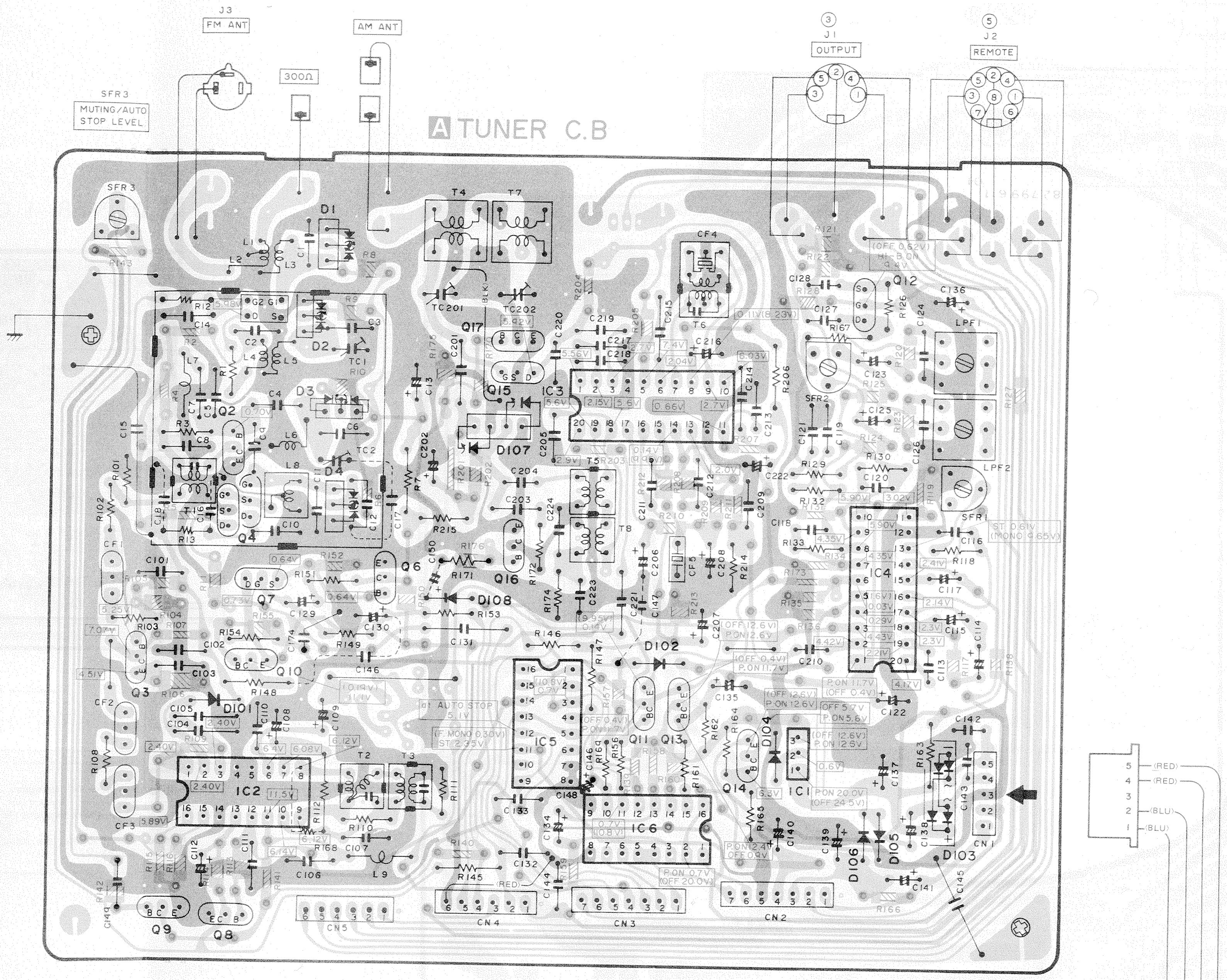
13. LW Frequency Range Adjustment

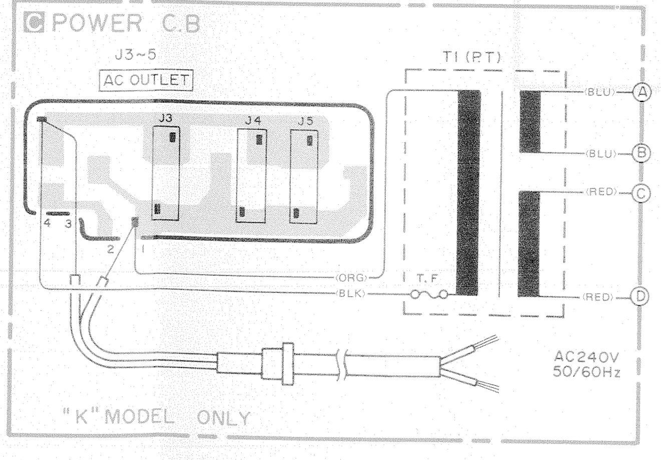
T8 .... 144 kHz
Method:
Adjust T8 to obtain a 0.8 V at TP1.

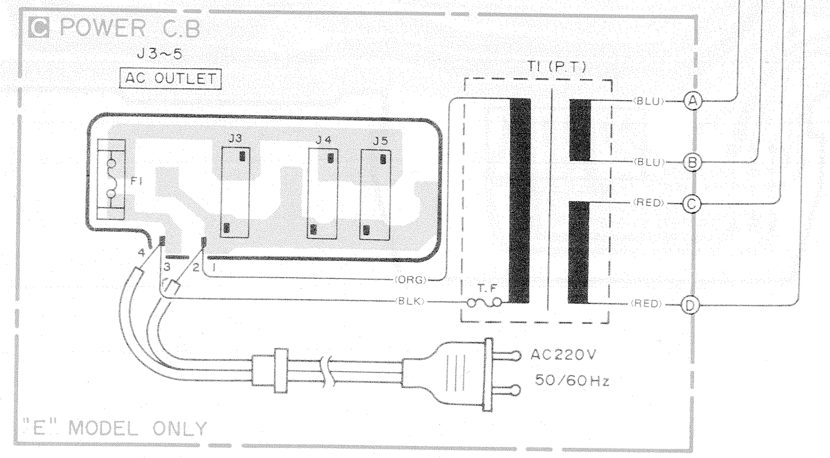
TP2 FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

15 16 17 18 19 20 21 22 23

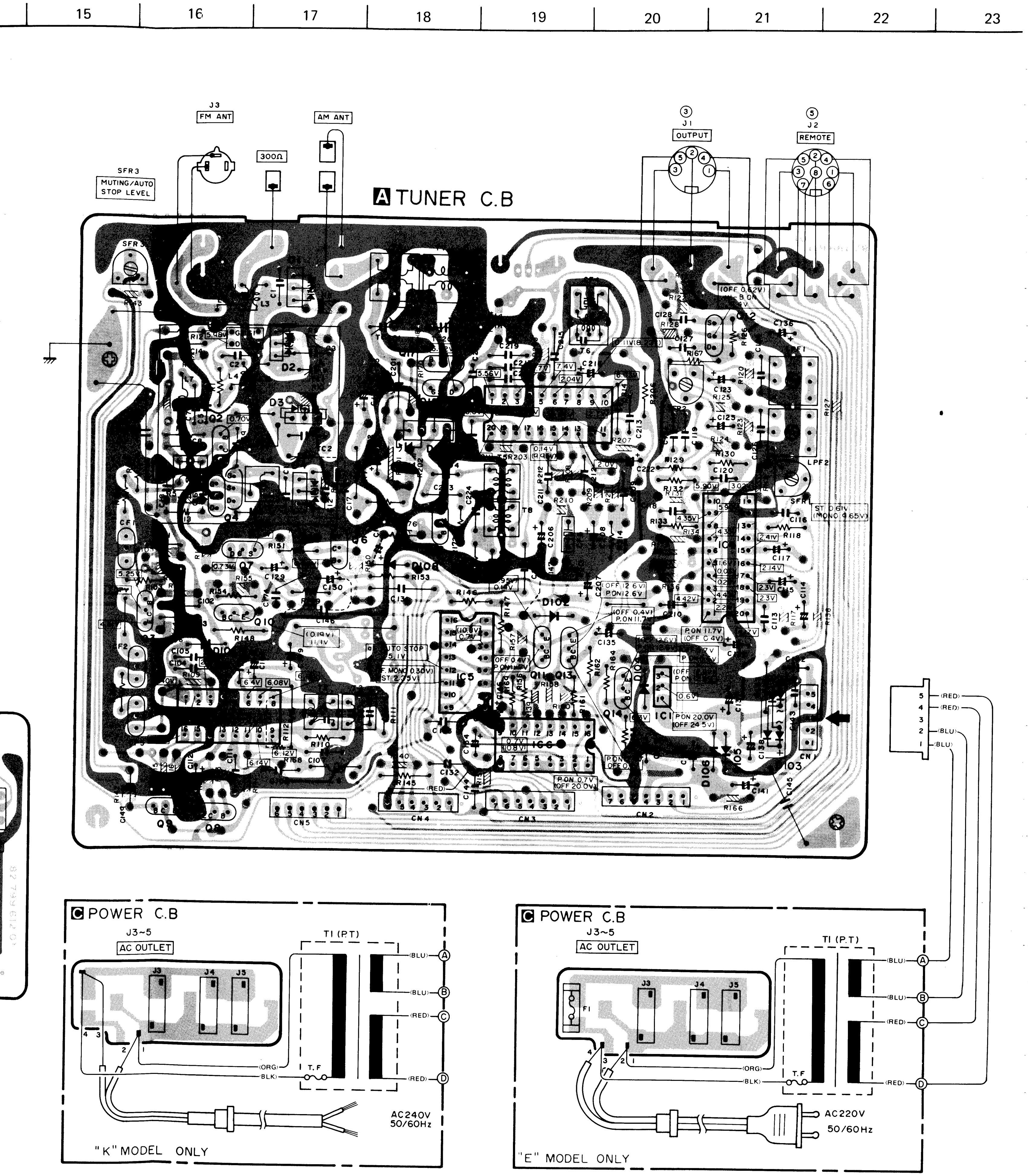



J3
FM ANT
AM ANT
300Ω
SFR3
MUTING/AUTO STOP LEVEL
A TUNER C.B
③ J1 OUTPUT
⑤ J2 REMOTE
IC1
IC2
IC3
IC4
IC5
IC6
CN1
CN2
CN3
CN4
CN5
(RED)
(RED)
(BLU)
(BLU)


C POWER C.B
J3~5
AC OUTLET
J3 J4 J5
T1 (PT)
(BLU) A
(BLU) B
(RED) C
(RED) D
(ORG)
(BLK)
T.F
AC240V 50/60Hz
"K" MODEL ONLY


C POWER C.B
J3~5
AC OUTLET
F1
J3 J4 J5
T1 (PT)
(BLU) A
(BLU) B
(RED) C
(RED) D
(ORG)
(BLK)
T.F
AC220V 50/60Hz
"E" MODEL ONLY

☆ **MEMO** ☆


15
16
17
18
19
20
21
22
23
J3
FM ANT
AM ANT
300Ω
SFR3
MUTING/AUTO STOP LEVEL
A TUNER C.B
③
J1
OUTPUT
⑤
J2
REMOTE
IC1
IC2
IC5
IC6
CN1
CN2
CN3
CN4
CN5
LPF2
SFR1
(RED)
(RED)
(BLU)
(BLU)
C POWER C.B
J3~5
AC OUTLET
J3
J4
J5
T1 (P.T)
(BLU)
(BLU)
(RED)
(RED)
(ORG)
(BLK)
T.F
F1
A
B
C
D
AC240V 50/60Hz
"K" MODEL ONLY
AC220V 50/60Hz
"E" MODEL ONLY

☆ **MEMO** ☆

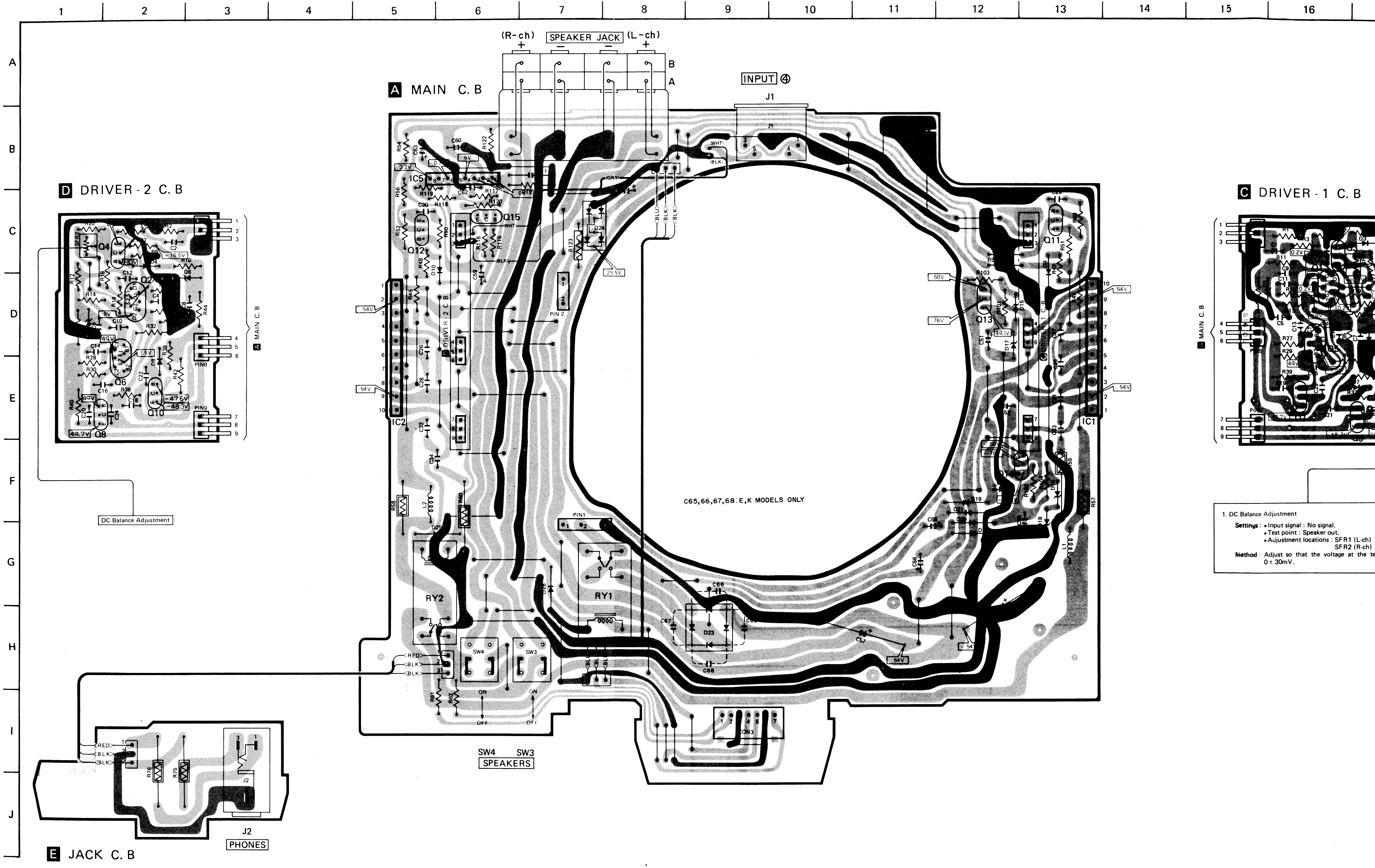
NOTES (1) ▨ Earth pattern ■ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.

Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special

WIRING (BX-110)



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
(R-ch)
SPEAKER JACK
(L-ch)
INPUT ④
J1
A MAIN C. B
D DRIVER - 2 C. B
C DRIVER - 1 C. B
E JACK C. B
IC1
IC2
IC5
Q4
Q2
Q6
Q8
Q10
Q11
Q12
Q13
Q15
D24
D23
RY1
RY2
SW4
SW3
SW4 SW3
SPEAKERS
ON
OFF
CON3
PIN1
PIN2
PIN8
PIN9
54V
50V
76V
25.5V
- 54
C65,66,67,68: E,K MODELS ONLY
DC Balance Adjustment
J2
PHONES

1. DC Balance Adjustment

Settings :
- Input signal : No signal.
- Test point : Speaker out.
- Adjustment locations : SFR1 (L-ch)
  SFR2 (R-ch)

Method : Adjust so that the voltage at the te
0 ± 30mV.

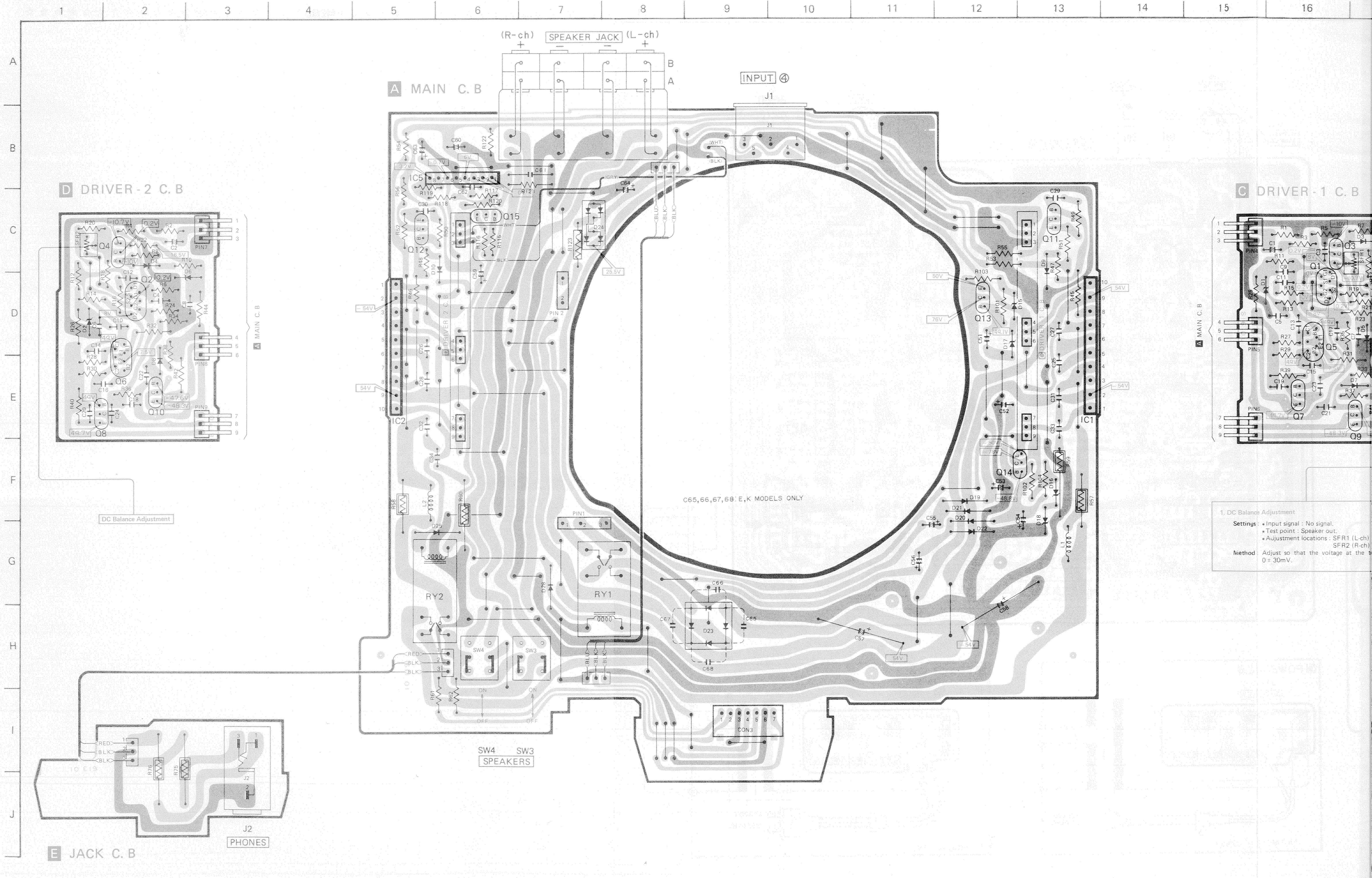
NOTES (1) ▨ Earth pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.

Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special

WIRING (BX-110)

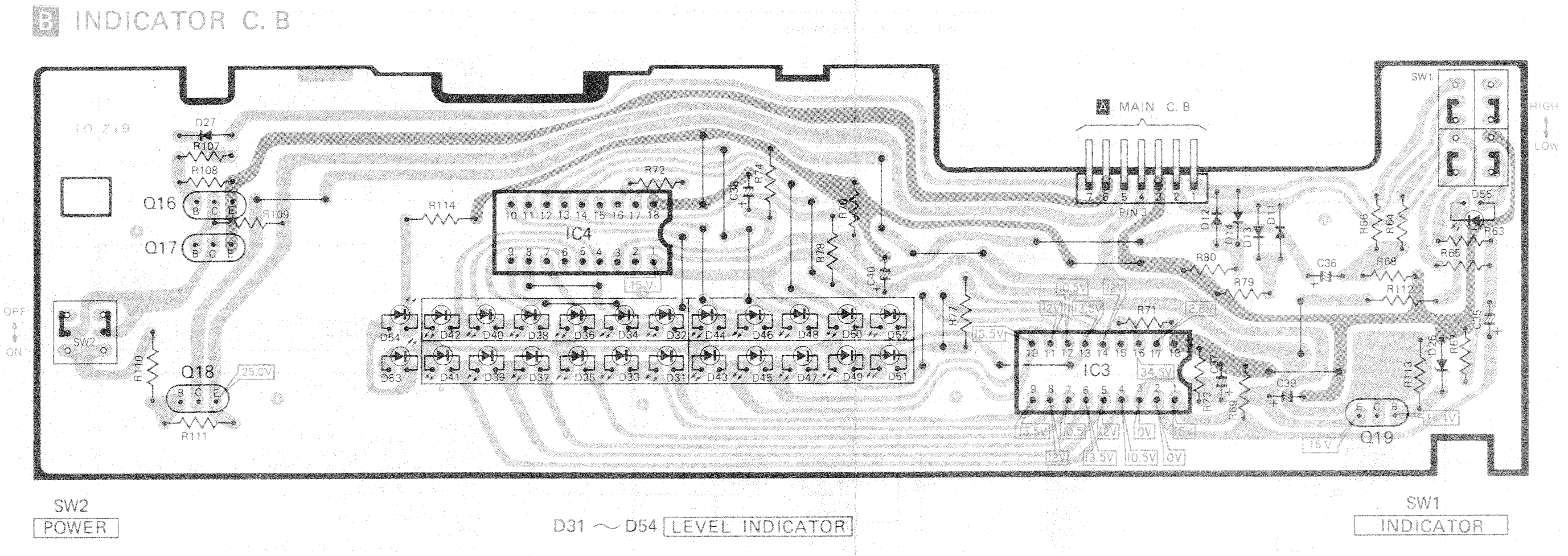

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
(R-ch)
SPEAKER JACK
(L-ch)
+
−
−
+
B
A
INPUT ④
J1
A MAIN C. B
D DRIVER-2 C. B
C DRIVER-1 C. B
E JACK C. B
IC1
IC2
IC5
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
RY1
RY2
D23
SW3
SW4
CON3
PIN1
PIN2
PIN4
PIN5
PIN6
PIN7
PIN8
PIN9
SFR1
SFR2
54V
−54V
50V
76V
−50V
−78V
25.5V
49.7V
−49.7V
−48.3V
−47.6V
C65,66,67,68: E,K MODELS ONLY
DC Balance Adjustment
A MAIN C.B
RED
BLK
BLU
WHT
GRY
ON
OFF
SW4 SW3
SPEAKERS
J2
PHONES

1. DC Balance Adjustment

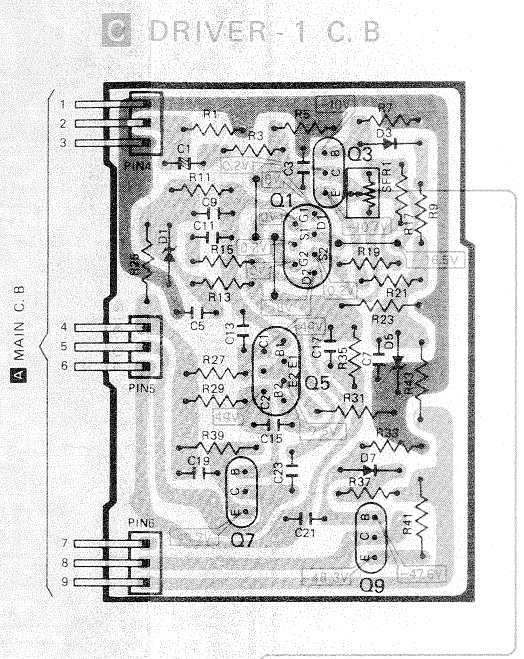
Settings: • Input signal : No signal.
• Test point : Speaker out.
• Adjustment locations : SFR1 (L-ch)
SFR2 (R-ch)

Method: Adjust so that the voltage at the t
0 ± 30mV.

rts which serve to maintain
e made to conform to special


B INDICATOR C.B
A MAIN C.B
PIN 3
SW1
HIGH
LOW
OFF
ON
SW2
IC4
IC3
Q16
Q17
Q18
Q19
D27
D55
R107
R108
R109
R110
R111
R114
R72
R70
R71
R78
R77
R80
R79
R68
R112
R66
R64
R63
R65
R73
R113
C36
C38
C39
C40
C45
D54
D53
D42
D41
D40
D39
D38
D37
D36
D35
D34
D33
D32
D31
D44
D43
D46
D45
D48
D47
D50
D49
D52
D51
15V
25.0V
12V
10.5V
13.5V
34.5V
2.8V
0V
15.4V
SW2
POWER
D31 ～ D54 LEVEL INDICATOR
SW1
INDICATOR

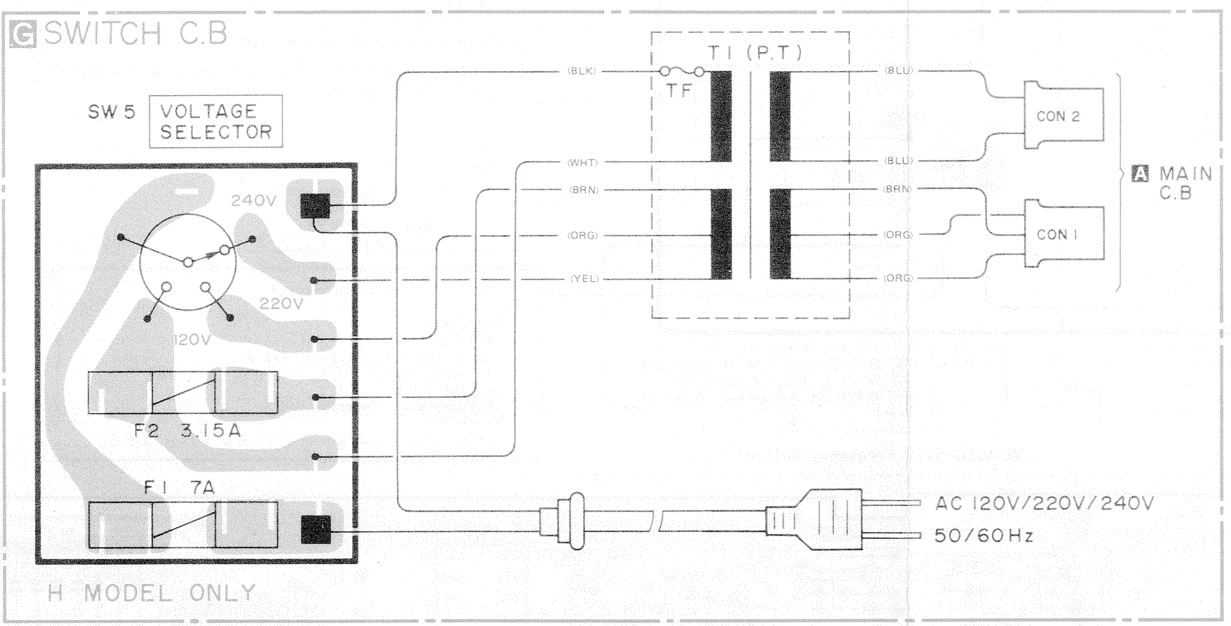
	COLORS
H	H, HB
U	UB
E	EB
K	K, KB
G	G

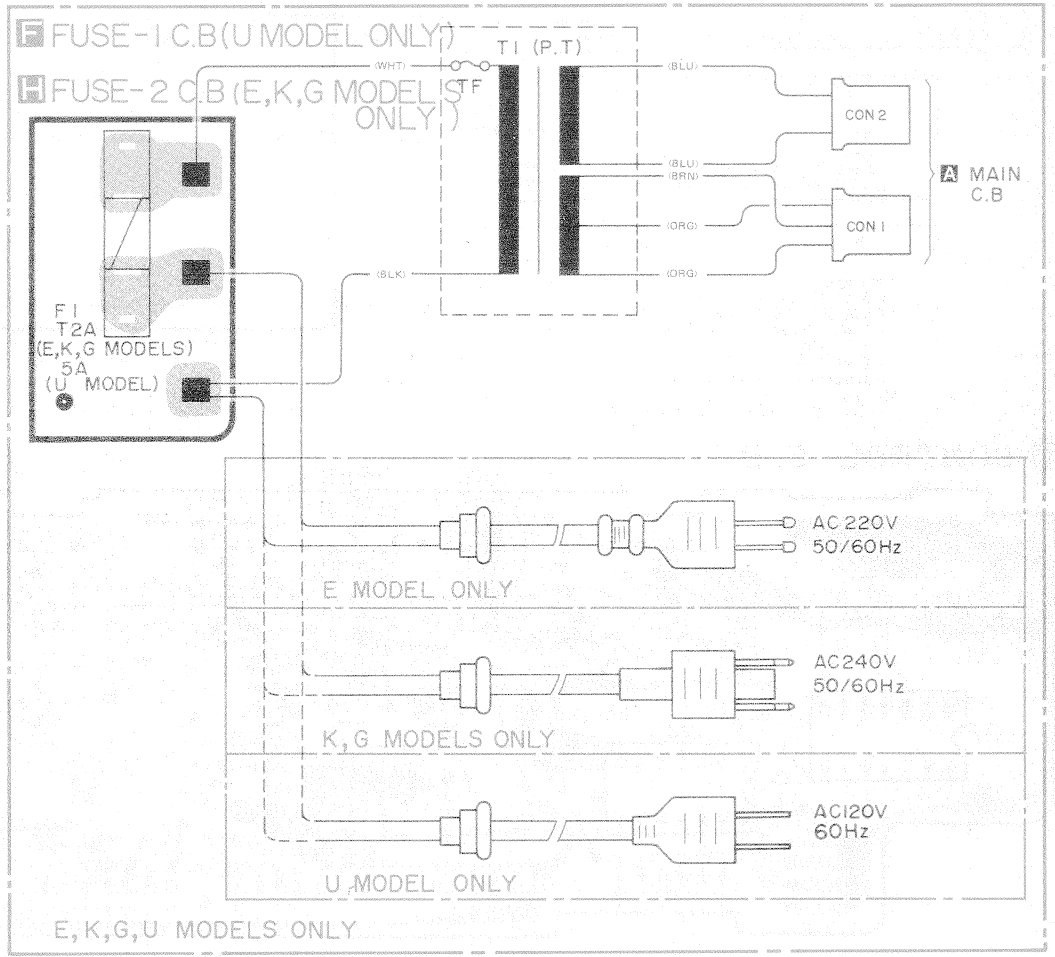

C DRIVER-1 C.B
A MAIN C.B
PIN4
PIN5
PIN6
1
2
3
4
5
6
7
8
9
Q1
Q3
Q5
Q7
Q9
SFR1
SFR2
R1
R3
R5
R7
R9
R11
R13
R15
R17
R19
R21
R23
R25
R27
R29
R31
R33
R37
R39
R41
R43
C1
C3
C5
C9
C11
C13
C15
C17
C19
C21
C23
D1
D3
D5
D7
-10V
0.2V
0V
-0.7V
16.5V
40V
-47.7V
-48.3V
-47.6V

1. DC Balance Adjustment

Settings : • Input signal : No signal.
• Test point : Speaker out.
• Aujustment locations : SFR1 (L-ch)
SFR2 (R-ch)

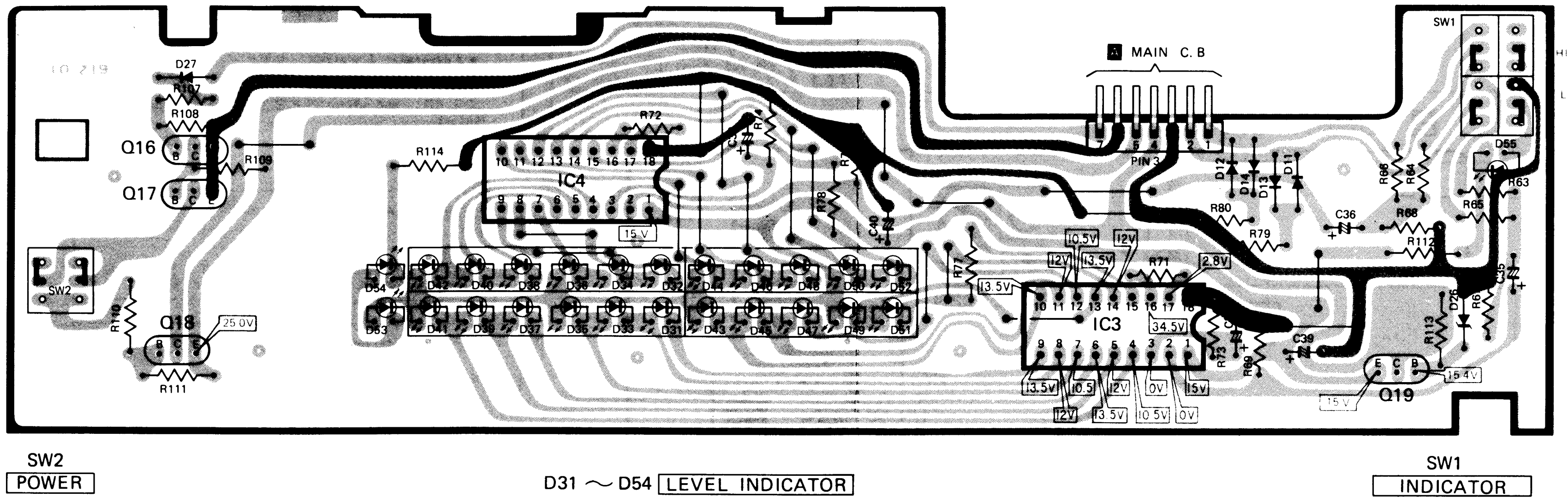
Method : Adjust so that the voltage at the test point is 0 ± 30mV.


G SWITCH C.B
SW 5 VOLTAGE SELECTOR
240V
220V
120V
F2 3.15A
F1 7A
T1 (P.T)
TF
(BLK)
(WHT)
(BRN)
(ORG)
(YEL)
(BLU)
CON 2
CON 1
A MAIN C.B
AC 120V/220V/240V
50/60Hz
H MODEL ONLY


F FUSE-1 C.B(U MODEL ONLY)
H FUSE-2 C.B (E,K,G MODELS ONLY)
F1
T2A
(E,K,G MODELS)
5A
(U MODEL)
T1 (P.T)
TF
(WHT)
(BLU)
(BRN)
(ORG)
(BLK)
CON 2
CON 1
A MAIN C.B
AC 220V
50/60Hz
E MODEL ONLY
AC240V
50/60Hz
K,G MODELS ONLY
AC120V
60Hz
U MODEL ONLY
E,K,G,U MODELS ONLY

which serve to maintain
ade to conform to special

B INDICATOR C. B


A MAIN C.B
D27
R107
R108
Q16
Q17
R109
R114
IC4
R72
PIN 3
SW1
HIGH
LOW
D55
R63
R66
R64
R65
R68
R112
C36
R79
R80
D12
D14
D13
D11
R71
IC3
C39
Q19
R113
D26
SW2
OFF
ON
Q18
R110
R111
R77
C40
R76
15V
25.0V
13.5V
12V
10.5V
2.8V
34.5V
0V
15.4V

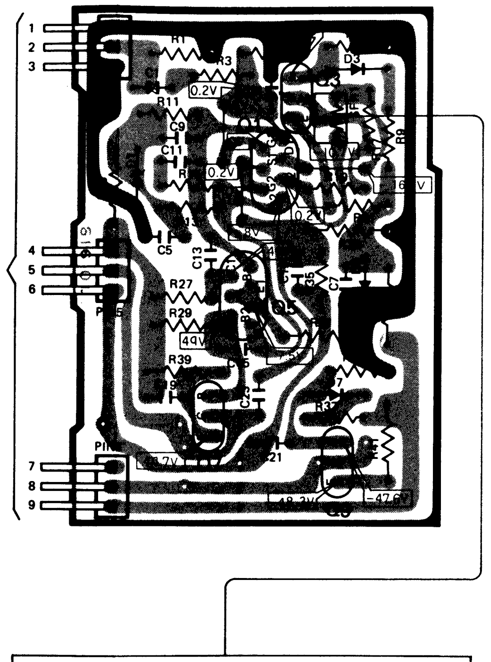
SW2
POWER

D31 ～ D54 LEVEL INDICATOR

SW1
INDICATOR

	COLORS
H	H, HB
U	UB
E	EB
K	K, KB
G	G

C DRIVER-1 C. B

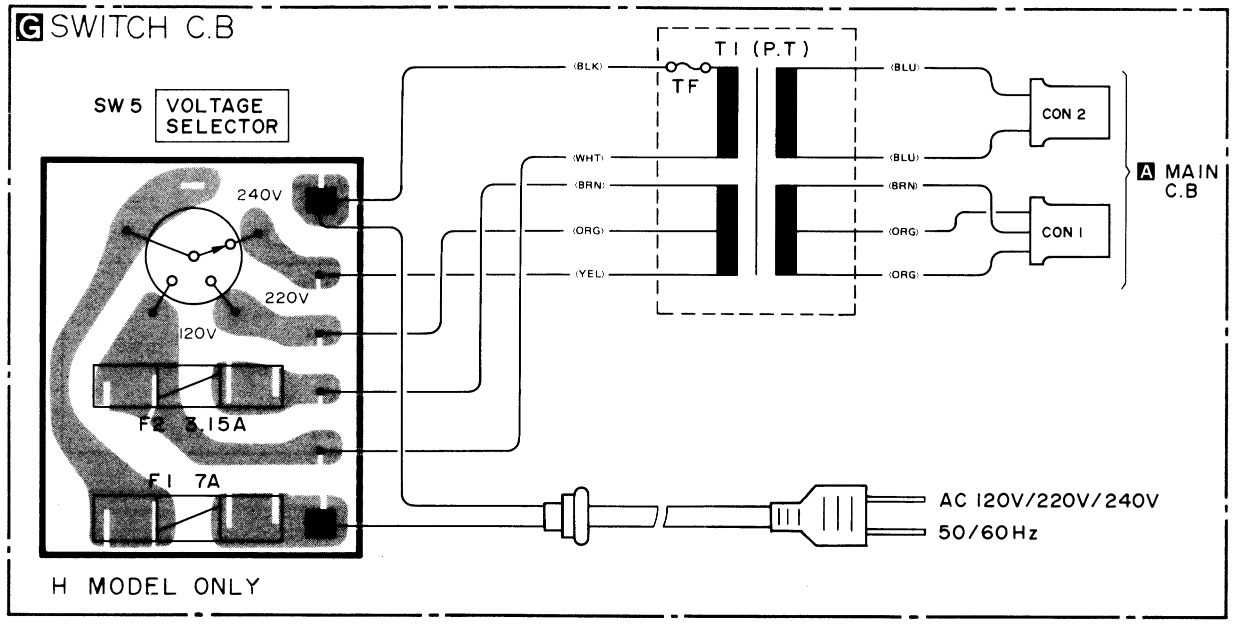

1
2
3
4
5
6
7
8
9
R1
R3
R11
C9
C11
C5
C13
R27
R29
R39
D3
Q8
0.2V
49V
-47.6V
A MAIN C.B

1. DC Balance Adjustment

Settings:
- Input signal : No signal.
- Test point : Speaker out.
- Adjustment locations : SFR1 (L-ch)
  SFR2 (R-ch)

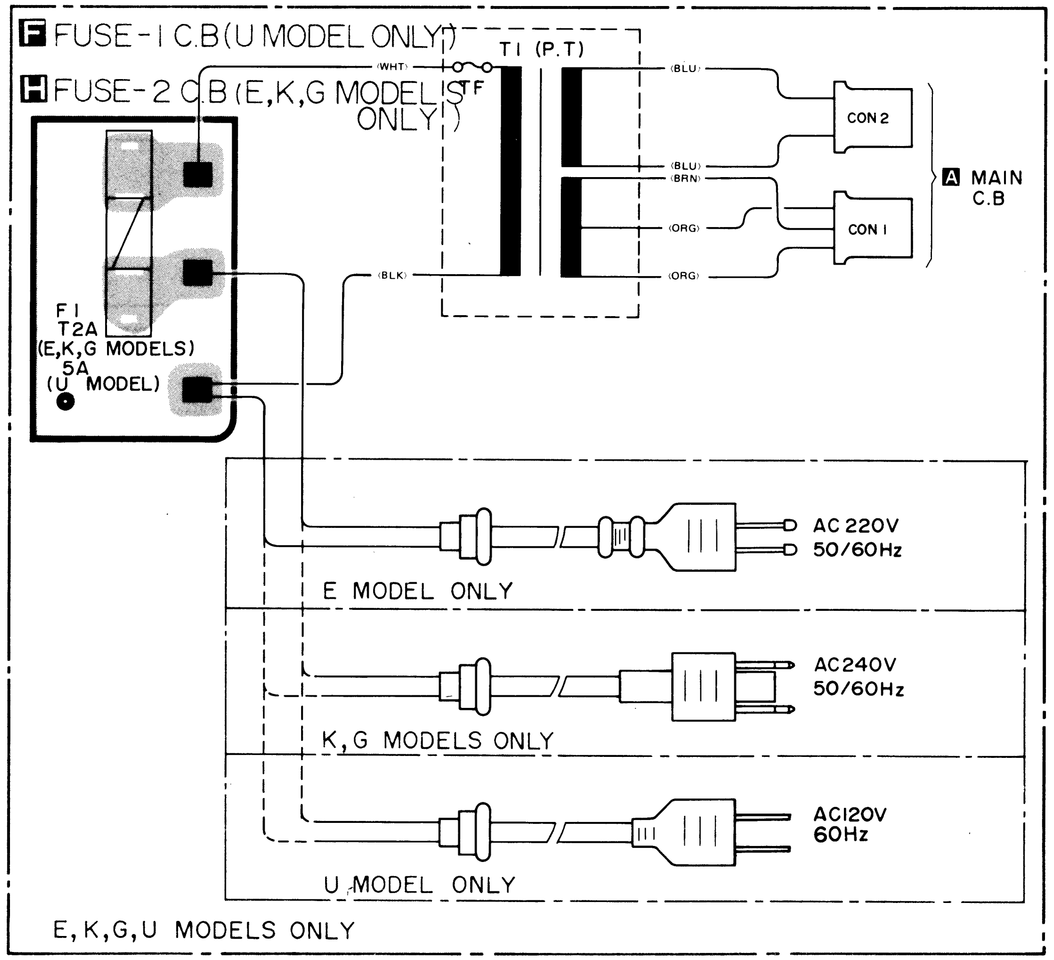
Method: Adjust so that the voltage at the test point is 0 ± 30mV.

G SWITCH C.B

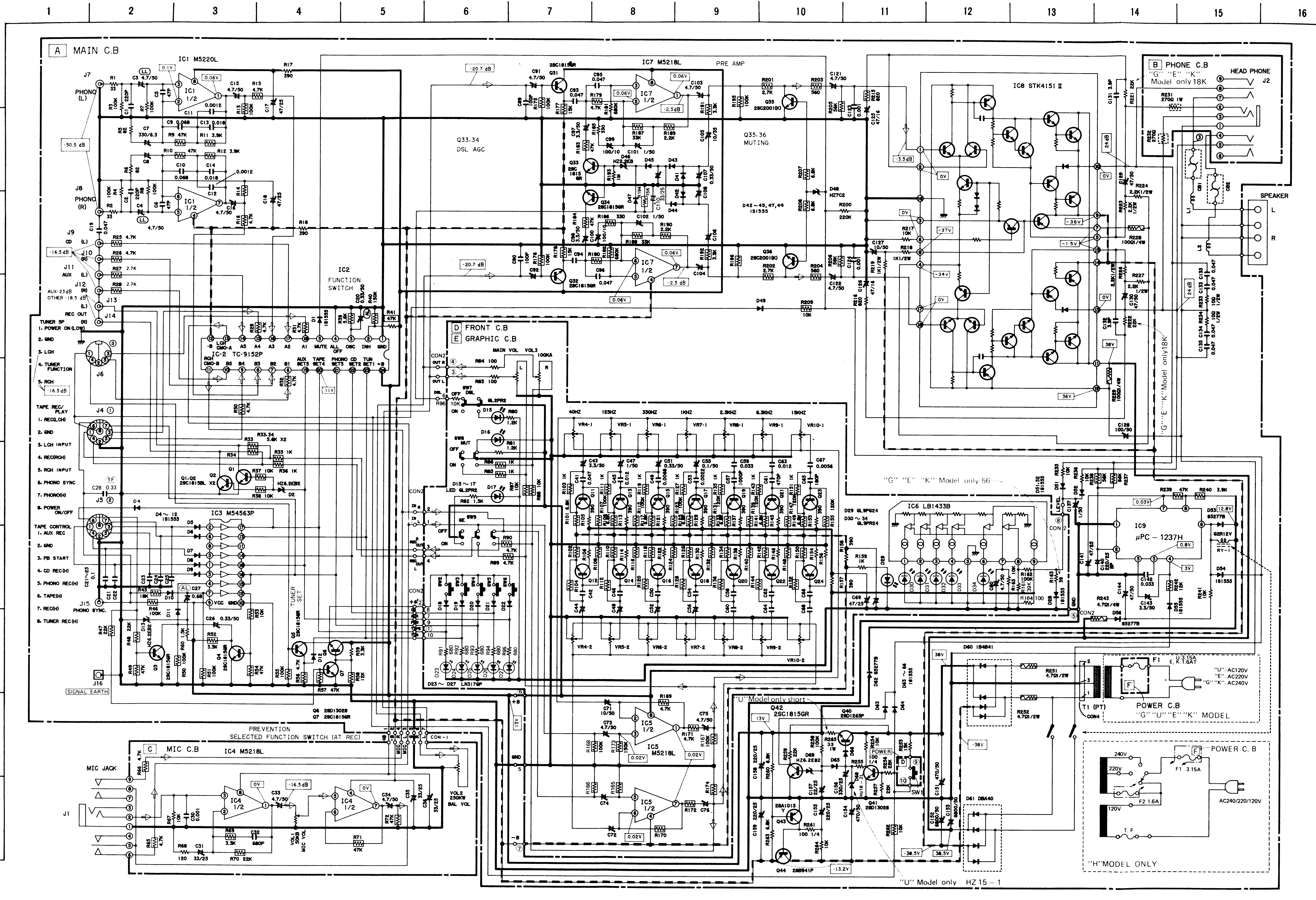

SW 5
VOLTAGE SELECTOR
240V
220V
120V
F2 3.15A
F1 7A
T1 (P.T)
TF
(BLK)
(WHT)
(BRN)
(ORG)
(YEL)
(BLU)
CON 2
CON 1
A MAIN C.B
AC 120V/220V/240V
50/60Hz
H MODEL ONLY

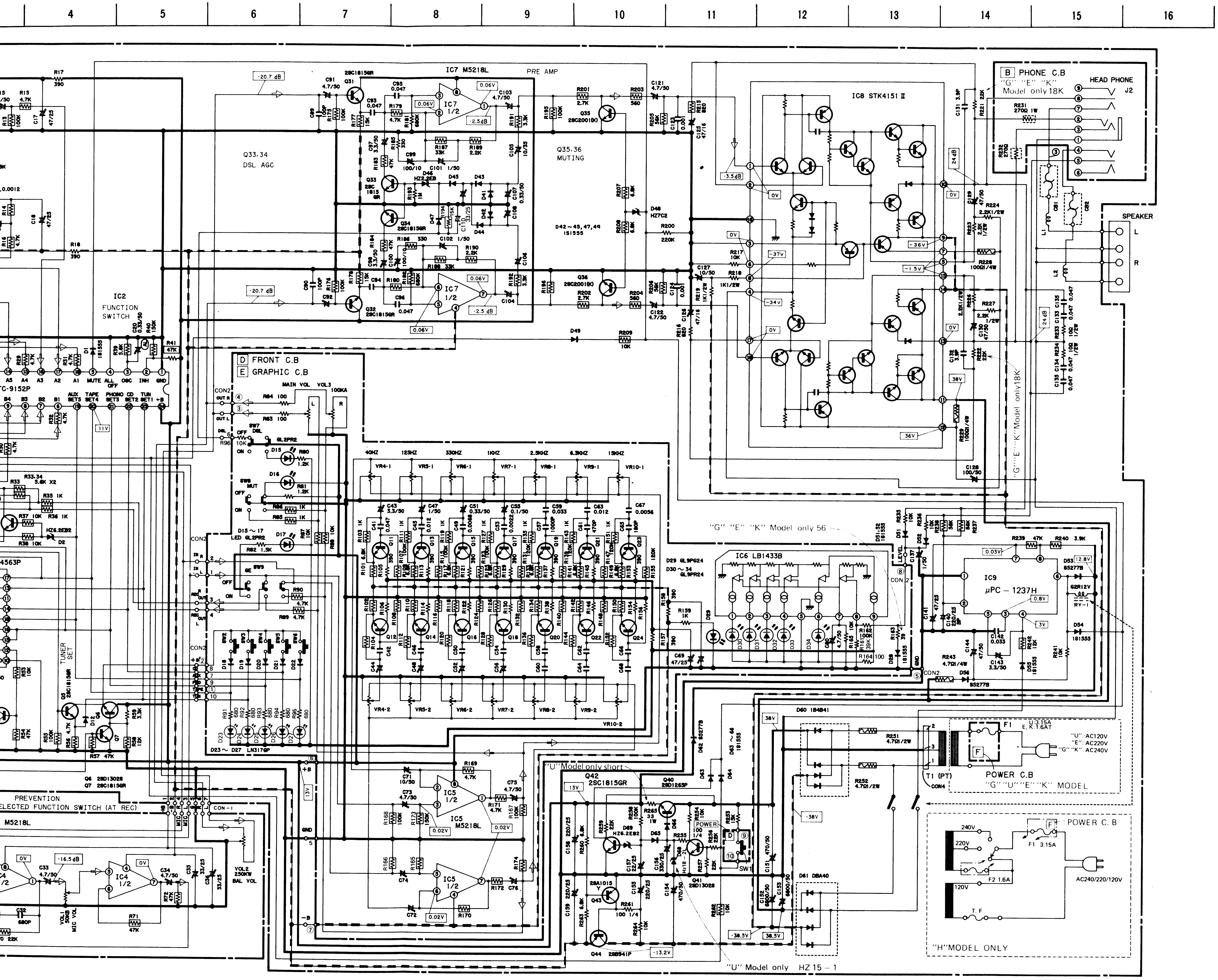
F FUSE-1 C.B (U MODEL ONLY)

H FUSE-2 C.B (E,K,G MODELS ONLY)


T1 (P.T)
TF
(WHT)
(BLU)
(BRN)
(ORG)
(BLK)
CON 2
CON 1
A MAIN C.B
F1
T2A
(E,K,G MODELS)
5A
(U MODEL)
AC 220V
50/60Hz
E MODEL ONLY
AC240V
50/60Hz
K,G MODELS ONLY
AC120V
60Hz
U MODEL ONLY
E,K,G,U MODELS ONLY

SCHEMATIC DIAGRAM (MX-90)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A MAIN C.B
IC1 M5220L
IC7 M5218L
PRE AMP
IC8 STK4151 Ⅱ
B PHONE C.B
"G" "E" "K" Model only 18K
HEAD PHONE
J2
SPEAKER
L
R
Q33.34
DSL AGC
Q35.36
MUTING
PHONO (L)
PHONO (R)
J7
J8
J9
CD
J10
J11
AUX
J12
J13
J14
REC OUT
IC2
FUNCTION SWITCH
IC-2 TC-9152P
D FRONT C.B
E GRAPHIC C.B
MAIN VOL
VOL3
100KA
TUNER 5P
1. POWER ON(LOW)
2. GND
3. LCH
4. TUNER FUNCTION
5. RCH
J6
TAPE REC/PLAY
J4
1. REC(LCH)
2. GND
3. LCH INPUT
4. REC(RCH)
5. RCH INPUT
6. PHONO SYNC
7. PHONO(H)
8. POWER ON/OFF
J5
TAPE CONTROL
1. AUX REC
2. GND
3. PB START
4. CD REC(H)
5. PHONO REC(H)
6. TAPE(H)
7. REC(H)
8. TUNER REC(H)
IC3 M54563P
Q1,Q2 2SC1815BL X2
J15
PHONO SYNC.
J16
SIGNAL EARTH
Q6 2SD1302S
Q7 2SC1815GR
TUNER SET
40HZ
125HZ
330HZ
1KHZ
2.5KHZ
6.3KHZ
15KHZ
"G" "E" "K" Model only 56
IC6 LB1433B
D29 GL9PG24
D30 ~ 34 GL9PR24
IC9
μPC - 1237H
RY-1
D23 ~ D27 LN3176P
LED GL2PR2
D15 ~ 17
IC5 M5218L
PREVENTION SELECTED FUNCTION SWITCH (AT REC)
CON-1
C MIC C.B
IC4 M5218L
MIC JACK
J1
VOL1 50KB MIC VOL
VOL2 250KW BAL VOL
"U" Model only short
Q42 2SC1815GR
Q40 2SD1265P
Q41 2SD1302S
Q43 2SA1015
Q44 2SB941P
D60 1B4B41
D61 DBA40
"U" Model only HZ 15 - 1
T1 (PT)
F1
U:3.15A
E, K:1.6AT
"U": AC120V
"E": AC220V
"G" "K": AC240V
F POWER C.B
"G" "U" "E" "K" MODEL
POWER C.B
240V
220V
120V
F1 3.15A
F2 1.6A
T.F
AC240/220/120V
"H" MODEL ONLY
-20.7 dB
-50.5 dB
-16.5 dB
-2.5 dB
0.06V
-37V
-36V
-34V
38V
36V
-38.5V
38.5V
-13.2V
13V


4
5
6
7
8
9
10
11
12
13
14
15
16
IC7 M5218L
PRE AMP
Q33.34
DSL AGC
Q35.36
MUTING
IC2
FUNCTION SWITCH
IC8 STK4151 II
B PHONE C.B
"G" "E" "K" Model only 18K
HEAD PHONE
J2
SPEAKER
L
R
D FRONT C.B
E GRAPHIC C.B
MAIN VOL
VOL3 100KA
40HZ
125HZ
330HZ
1KHZ
2.5KHZ
6.3KHZ
15KHZ
"G" "E" "K" Model only 56
IC6 LB1433B
IC9
µPC-1237H
TUNER SET
PREVENTION
ELECTED FUNCTION SWITCH (AT REC)
M5218L
IC5 M5218L
IC4 1/2
VOL2 250KW BAL VOL
VOL1 50KB MIC VOL
"U" Model only short
Q42 2SC1815GR
Q40 2SD1265P
Q41 2SD1302S
Q43 2SA1015 Y
Q44 2SB941P
D61 DBA40
D60 1B4B41
T1 (PT)
POWER C.B
"G" "U" "E" "K" MODEL
"U": AC120V
"E": AC220V
"G" "K": AC240V
F1 U:3.15A E,K:1.6AT
POWER C. B
F1 3.15A
F2 1.6A
AC240/220/120V
240V
220V
120V
T. F
"H" MODEL ONLY
"U" Model only HZ 15 - 1
"G" "E" "K" Model only 18K

NOTES:

1) █ B (+) power supply ▌▌▌B (–) power supply
2) ➡ Signal path
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But ( ) is with AM reception or recording.
4) Resistors with no designation have a rated power of 1/4W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectric strength of less than 50WV.
6) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
7) Ceramic capacitor symbols:
   - ─┤├─ For temperature compensation (SL)
   - ─┤├─ High dielectric constant system (YY)
   - ─┤├─ High dielectric constant system (YW, YP, YZ)
   - ─┤├─ Semiconductor ceramic
   - ─┤├─ For temperature compensation (SH)
8) Explanation of symbols
   - Ⓜ Mylar capacitor
   - Ⓐ Aluminum solid capacitor
   - (PP) Polypropylene film capacitor
   - (BP) Bi-polarized capacitor
   - (LL) Low-leakage capacitor
   - Ⓣ Tantalum capacitor
   - Ⓢ Styrol capacitor
   - ▭ Printed resistor
   - ▭ Fuse resistor
   - ▭ Nonflammable resistor
   - (LN) Low noise resistor

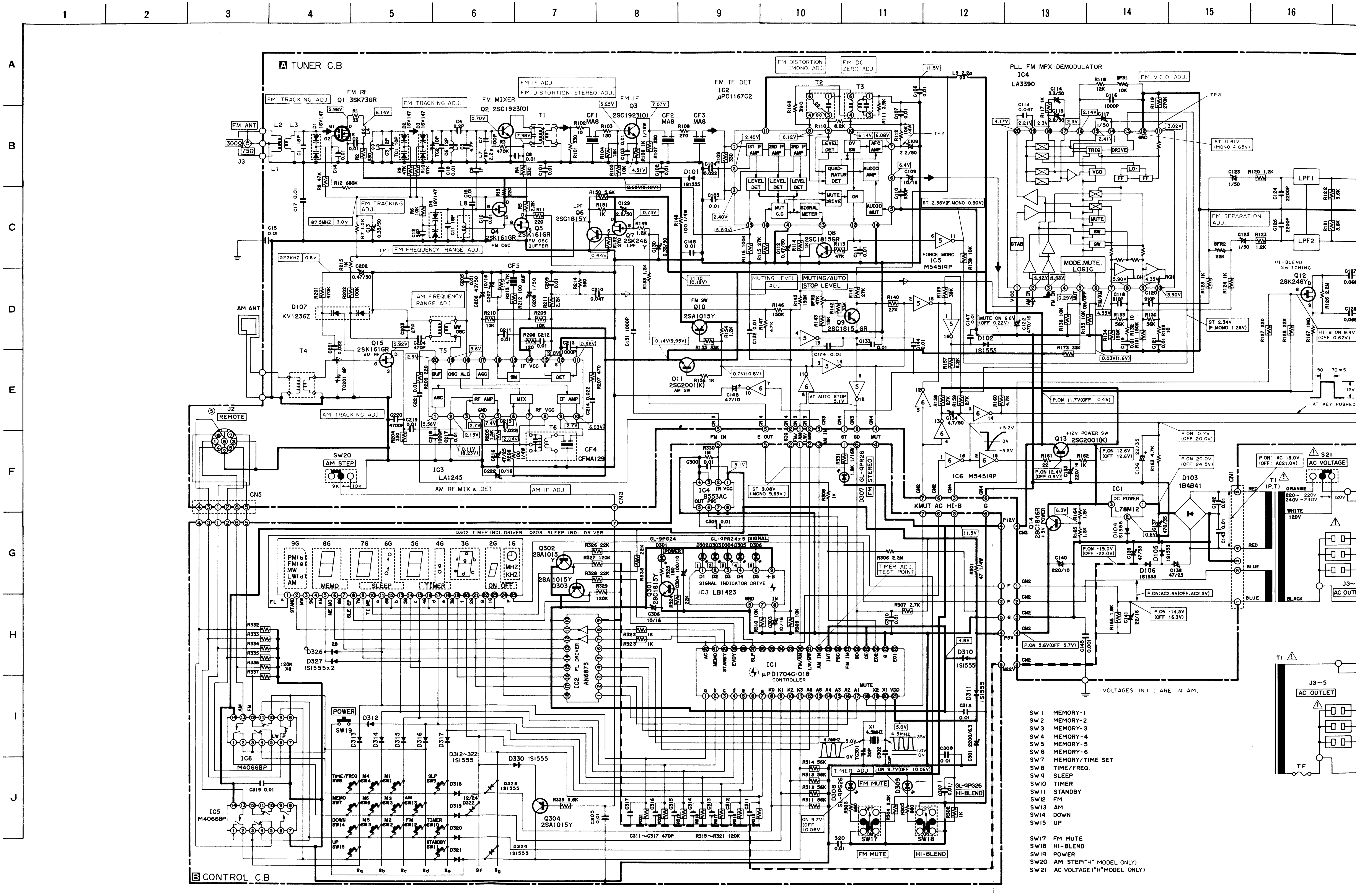
⚠ Safety component symbol

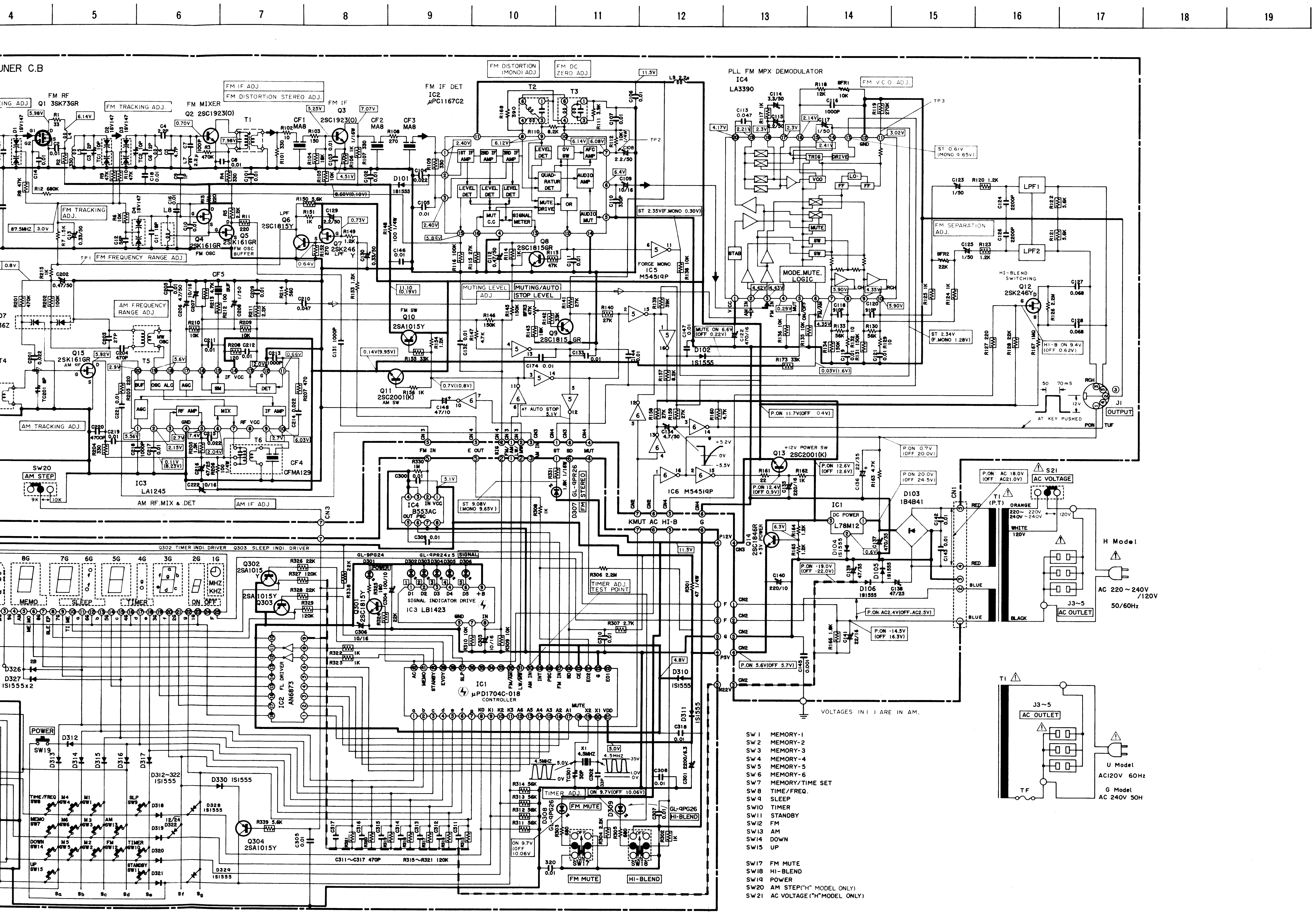
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications.

Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

● This schematic diagram is subject to change without notice in the interests of improved performance.

SCHEMATIC DIAGRAM (TX-110 H, U, G)


A TUNER C.B
B CONTROL C.B
FM ANT
300Ω
75Ω
J3
AM ANT
FM TRACKING ADJ.
FM RF Q1 3SK73GR
FM MIXER Q2 2SC1923(O)
FM IF Q3 2SC1923(O)
FM IF ADJ
FM DISTORTION STEREO ADJ.
FM IF DET IC2 μPC1167C2
FM DISTORTION (MONO) ADJ.
FM DC ZERO ADJ.
PLL FM MPX DEMODULATOR IC4 LA3390
FM VCO ADJ.
FM SEPARATION ADJ.
FM FREQUENCY RANGE ADJ
FM OSC Q4 2SK161GR
FM OSC BUFFER Q5 2SK161GR
LPF Q6 2SC1815Y
LPF Q7 2SK246Y
FM SW Q10 2SA1015Y
AM SW Q11 2SC2001(K)
MUTING LEVEL ADJ
MUTING/AUTO STOP LEVEL
FORCE MONO IC5 M54519P
IC6 M54519P
HI-BLEND SWITCHING Q12 2SK246Y
AM FREQUENCY RANGE ADJ
AM TRACKING ADJ.
AM RF Q15 2SK161GR
D107 KV1236Z
IC3 LA1245
AM RF.MIX & .DET
AM IF ADJ.
REMOTE J2
SW20 AM STEP
+12V POWER SW Q13 2SC2001(K)
+5V POWER Q14 2SC1846R
IC1 DC POWER L78M12
D103 1B4B41
S21 AC VOLTAGE
T1 (P.T)
AC OUTLET J3~5
Q302 TIMER INDI. DRIVER Q303 SLEEP INDI. DRIVER
IC3 LB1423 SIGNAL INDICATOR DRIVE
IC2 FL DRIVER AN6873
IC1 μPD1704C-018 CONTROLLER
IC6 M4066BP
IC5 M4066BP
POWER SW19
TIMER ADJ. TEST POINT
FM MUTE SW17
HI-BLEND SW18
X1 4.5MHZ
VOLTAGES IN ( ) ARE IN AM.
SW1 MEMORY-1
SW2 MEMORY-2
SW3 MEMORY-3
SW4 MEMORY-4
SW5 MEMORY-5
SW6 MEMORY-6
SW7 MEMORY/TIME SET
SW8 TIME/FREQ.
SW9 SLEEP
SW10 TIMER
SW11 STANDBY
SW12 FM
SW13 AM
SW14 DOWN
SW15 UP
SW17 FM MUTE
SW18 HI-BLEND
SW19 POWER
SW20 AM STEP("H" MODEL ONLY)
SW21 AC VOLTAGE("H" MODEL ONLY)


4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
UNER C.B
FM RF Q1 3SK73GR
FM TRACKING ADJ.
FM MIXER Q2 2SC1923(O)
FM IF ADJ
FM DISTORTION STEREO ADJ.
FM IF Q3 2SC1923(O)
CF1 MA8
CF2 MA8
CF3 MA8
FM IF DET IC2 μPC1167C2
FM DISTORTION (MONO) ADJ.
FM DC ZERO ADJ.
PLL FM MPX DEMODULATOR IC4 LA3390
FM V.C.O ADJ.
FM SEPARATION ADJ.
LPF1
LPF2
HI-BLEND SWITCHING Q12 2SK246Y
FM TRACKING ADJ.
Q4 2SK161GR FM OSC
Q5 2SK161GR FM OSC BUFFER
Q6 2SC1815Y LPF
Q7 2SK246Y LPF
Q8 2SC1815GR
FM FREQUENCY RANGE ADJ.
FORCE MONO IC5 M54519P
AM FREQUENCY RANGE ADJ
CF5
Q10 2SA1015Y FM SW
MUTING LEVEL ADJ
MUTING/AUTO STOP LEVEL
Q9 2SC1815 GR
Q11 2SC2001(K) AM SW
D102 1S1555
Q15 2SK161GR AM RF
T5
IC3 LA1245
AM RF.MIX & .DET
AM IF ADJ
CF4 CFMA129
AM TRACKING ADJ.
SW20 AM STEP
Q13 2SC2001(K) +12V POWER SW
IC6 M54519P
J1 OUTPUT
AT KEY PUSHED
IC4 BU553AC
D307 GL-9PR26 FM STEREO
KMUT AC HI-B
IC1 L78M12 DC POWER
Q14 2SC1846R +5V POWER
D103 1B4B41
T1 (P.T)
S21 AC VOLTAGE
H Model
AC 220~240V /120V 50/60Hz
J3~5 AC OUTLET
Q302 TIMER INDI. DRIVER Q303 SLEEP INDI. DRIVER
Q302 2SA1015
Q303 2SA1015Y
MEMO SLEEP TIMER ON OFF MHZ KHZ
GL-9PG24
GL-9PR24x5 SIGNAL
D301 POWER
Q301 2SC1815Y
SIGNAL INDICATOR DRIVE IC3 LB1423
IC2 FL DRIVER AN6873
IC1 μPD1704C-018 CONTROLLER
TIMER ADJ TEST POINT
D310 1S1555
D311 1S1555
X1 4.5MHz
TIMER ADJ.
D308 GL-9PG26 FM MUTE
D309 GL-9PG26 HI-BLEND
SW17 FM MUTE
SW18 HI-BLEND
POWER SW19
D312~322 1S1555
D330 1S1555
Q304 2SA1015Y
C311~C317 470P R315~R321 120K
D326
D327 1S1555x2
T1
J3~5 AC OUTLET
U Model AC120V 60Hz
G Model AC 240V 50H
TF

VOLTAGES IN ( ) ARE IN AM.

SW1 MEMORY-1
SW2 MEMORY-2
SW3 MEMORY-3
SW4 MEMORY-4
SW5 MEMORY-5
SW6 MEMORY-6
SW7 MEMORY/TIME SET
SW8 TIME/FREQ.
SW9 SLEEP
SW10 TIMER
SW11 STANDBY
SW12 FM
SW13 AM
SW14 DOWN
SW15 UP

SW17 FM MUTE
SW18 HI-BLEND
SW19 POWER
SW20 AM STEP("H" MODEL ONLY)
SW21 AC VOLTAGE("H" MODEL ONLY)

ELECTRICAL MAIN PARTS LIST

"★★★" shows unavailable Repair Part.

Symbol No.	Part No.	Description	Remark
<MAIN CIRCUIT BOARD SECTION>			
PCB-A	*	Main circuit board	
IC1	87-027-925-01	IC, M5220	
IC2	87-027-978-01	IC, TC9152P	
IC3	87-020-145-01	IC, M54563	
IC7	87-027-895-01	IC, M5218L	
IC8	87-020-090-01	IC, STK-4151-2	
IC9	87-027-787-01	IC, µPC1237H	
Q1.2	89-318-156-01	Transistor, 2SC1815BL	
Q3.4.5.7.31. 32.33.34.42	89-318-155-01	Transistor, 2SC1815GR	
Q6.41	89-413-023-01	Transistor, 2SD1302S	
Q13	89-110-155-01	Transistor, 2SA1015(GR)	
Q35.36	89-320-011-01	Transistor, 2SC2001(K)	
Q40	89-412-653-01	Transistor, 2SD1265(O)	
Q44	89-209-412-31	Transistor, 2SB941(PQ)	
D1.4.5.6.7.8. 9.10.11.12. 41.42.43.44. 45.47.49.51. 52.54.55.57. 63.64.65.66	89-027-097-01	Diode, 1S1555	
D2.13.69	87-027-431-01	Zener diode, RD6.2EB2	
D45	87-027-405-01	Zener diode, RD2.2EB	
D48	87-027-606-01	Zener diode, HZ7C2L	
D53.56.62	87-027-365-01	Diode, S5277B	
D60	87-027-376-01	Diode, 1B4B41	
D61	87-020-144-01	Diode, DBA4D0	
D68	87-027-347-01	Zener diode, HZ18-2L (E, EB, K, KB, G models only)	
D68	87-027-508-01	Zener diode, HZ15-1 (UB model only)	
L1.2	87-005-158-01	Inductor coil 1µH	
RY1	87-045-201-01	Relay G2R 12V	
CB1.2	87-030-077-01	Circuit breaker, 2.2A	
	82-795-613-01	Speaker terminal, 4P	★★★
J4.5.6	82-798-626-01	Pin jack ass'y (REC/PLAY, CONTROL, TUNER)	
J7.8.9.10.11. 12.13.14.15	81-731-614-01	Pin Jack ass'y (PHONO, CD, AUX, RECOUT)	
CON2.3	82-798-643-01	Heatsink	★★★
CON4	87-049-367-01	Connector ass'y, 10P	★★★
	87-032-897-01	Connector ass'y, 3P	★★★
PIN1	87-049-277-01	Pin, 7P	★★★
		<Resistors>	
⚠R228.229	87-029-119-01	100Ω 1/4W Fuse resistor	
⚠R243	87-029-114-01	4.7Ω 1/4W Fuse resistor	
⚠R251.252	87-029-366-01	4.7Ω 1/2W Fuse resistor	
R265	87-025-351-01	33Ω 1W Nonflammable (H, HB, E, EB, K, KB, G models only)	
		<Cpacitors>	
C5.6	87-018-024-01	47pF Ceramic	
C89.90	87-018-032-01	100pF Ceramic	
C123.124	87-018-044-01	1000pF Ceramic	
C152.153	87-015-956-01	6800µF 50V Electrolytic	
C158.159	87-015-989-01	220µF 25V Electrolytic BP	
<PHONO CIRCUIT BOARD SECTION>			
PCB-B	*	Phono circuit board	
J2	87-049-352-01	Jack, 6.3ø w/switch (HEADPHONE)	
		<Resistor>	
R231.232	87-025-154-01	270Ω 1W Metal film	
<MIC CIRCUIT BOARD SECTION>			
PCB-C	*	MIC circuit board	
IC4	87-027-895-01	IC, M5218L	
J1	82-675-661-01	Jack, 6.3ø w/switch (MIC)	
VR2	87-021-847-01	Volume, 250kΩ-W(BALANCE)	
VR3	87-021-848-01	Volume, 50kΩ-B(MIC VOLUME)	
CON1	82-798-640-01	Connector ass'y 7P	★★★
		<Capacitors>	
C30	87-018-044-11	0.01µF Ceramic	
C32	87-018-042-01	680pF Ceramic	
<FRONT CIRCUIT BOARD SECTION>			
PCB-D	*	Front circuit board	
IC5	87-027-895-01	IC, M5218L	
D15.16.17	87-020-128-01	LED, GL-2PR2(MUT, DSL, REC OUT)	
D23.24.25.26	87-027-543-01	LED, LN317GP(TAPE, TUNER, PHONO, CD)	
D29	87-020-130-01	LED, GL-9PG24	
D30.31.32.33. 34	87-020-127-01	LED, GL-9PR24(LEVEL)	
VR3	87-021-845-01	Slide volume, 100kΩ-W(VOLUME)	
VR4.5.6.7.8. 9.10	87-021-846-01	Slide volume, 250kΩ-W(EQUALIZER VOL)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2.3.4.5.6	87-031-771-01	Tact switch(TUNER, TAPE, PHONE, CD, AUX)	
SW7.8.9	87-031-815-01	Push-switch(MUT, DSL, REC OUT)	
PIN2.3	87-049-366-01	Pin, 20P	★★★
		<Capacitor>	
C73.74.75.76. 80	87-015-698-01	4.7µF 50V Electrolytic	
<GRAPHIC CIRCUIT BOARD SECTION>			
PCB-E	*	GRAPHIC circuit board	
Q11.12.13.14. 15.16.17.18. 19.20.21.22. 23.24	89-318-155-01	Transistor, 2SC1815(GR)	
		<Capacitors>	
C43.44	87-015-697-01	3.3µF 50V Electrolytic	
C47.48	87-015-695-01	1µF 50V Electrolytic	
C51.52	87-015-693-01	0.33µF 50V Electrolytic	
C55.56	87-015-691-01	0.1µF 50V Electrolytic	
C57.58	87-018-044-01	1000pF Ceramic	
C61.62	87-018-040-81	470pF Ceramic	
C65.66	87-018-035-81	180pF Ceramic SL	
<POWER CIRCUIT BOARD SECTION>			
⚠PCB-F	*	Power circuit board (H, HB models only)	
⚠PCB-F	*	Power circuit board (UB, E, EB, K, KB, G models only)	
⚠F1	87-035-256-01	Fuse, 3.15A (H, HB models only)	
⚠F1	87-035-302-01	Fuse, 3.15A (UB model only)	
⚠F1	87-035-224-01	Fuse, 1.6A "T" (E, EB, K, KB, G models only)	
⚠F2	87-035-252-01	Fuse, 1.6A (H, HB models only)	
⚠S1	87-031-586-01	Rotary switch(VOLTAGE SELECTOR) (H, HB models only)	
	87-098-045-01	Fuse label 3.15A (H, HB, UB models only)	
	87-098-018-01	Fuse label 1.6A "T" (E, EB, K, KB, G models only)	★★★
	87-098-042-01	Fuse label 1.6A (H, HB models only)	★★★
⚠	87-033-147-01	Fuse clamp	
<MISCELLANEOUS>			
⚠T1	82-798-617-01	Power transformer (H, HB models only)	
⚠T1	82-798-618-01	Power transformer (UB models only)	
⚠T1	82-798-619-01	Power transformer (E, EB models only)	
⚠T1	82-798-620-01	Power transformer (K, KB, G models only)	
⚠	87-034-962-01	AC power cord (H model only)	
⚠	87-034-992-01	AC power cord (HB model only)	
⚠	87-034-578-01	AC power cord (UB model only)	
⚠	82-788-674-01	AC power cord (E, EB models only)	
⚠	87-034-708-01	AC power cord (K, KB, G models only)	
⚠	87-085-184-01	Cord bushing (H, HB models only)	
⚠	87-085-189-01	Cord bushing (UB model only)	
⚠	87-085-185-01	Cord bushing (E, EB, KB, G models only)	

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary,please order the entire circuit board.

Combination circuit board A 82-798-602-11
PCB-A 82-798-604-11
PCB-B 82-798-605-11
PCB-F 82-798-608-11 (H, HB models only)
PCB-F 82-798-607-11 (U, E, EB, K, KB, G models only)

Combination circuit board B 82-798-609-11
PCB-C 82-798-612-11
PCB-D 82-798-610-11
PCB-E 82-798-611-11

"★★★" shows unavailable Repair Part.

ription	Remark
ARD	
N >	
1-2	
I	
815BL	
815GR	
302S	
015(GR)	
001(K)	
265(O)	
41(PQ)	
2EB2	
2EB	
C2L	
8-2L (E, EB, K,	
5-1 (UB model only)	
V	
2A	
P	★★★
C/PLAY, CON-	
)	
ONO, CD, AUX.	
	★★★
0P	★★★
P	★★★
	★★★
s >	
W Fuse resistor	
W Fuse resistor	
W Fuse resistor	
W Nonflammable	
. KB, G models only)	
s >	
Ceramic	
Ceramic	
Ceramic	
V Electrolytic	
V Electrolytic BP	
OARD	
N >	
ch (HEADPHONE)	

Symbol No.	Part No.	Description	Remark
		< Resistor >	
R231,232	87-025-154-01	270Ω 1W Metal film	
< MIC CIRCUIT BOARD SECTION >			
PCB-C	*	MIC circuit board	
IC4	87-027-895-01	IC, M5218L	
J1	82-675-661-01	Jack, 6.3ø w/switch (MIC)	
VR2	87-021-847-01	Volume, 250kΩ-W(BALANCE)	
VR3	87-021-848-01	Volume, 50kΩ-B(MIC VOLUME)	
CON1	82-798-640-01	Connector ass'y 7P	★★★
		< Capacitors >	
C30	87-018-044-11	0.01μF Ceramic	
C32	87-018-042-01	680pF Ceramic	
< FRONT CIRCUIT BOARD SECTION >			
PCB-D	*	Front circuit board	
IC5	87-027-895-01	IC, M5218L	
D15,16,17	87-020-128-01	LED, GL-2PR2(MUT, DSL, REC OUT)	
D23,24,25,26	87-027-543-01	LED, LN317GP(TAPE, TUNER, PHONO, CD)	•
D29	87-020-130-01	LED, GL-9PG24	
D30,31,32,33,34	87-020-127-01	LED, GL-9PR24(LEVEL)	
VR3	87-021-845-01	Slide volume, 100kΩ-W(VOLUME)	
VR4,5,6,7,8,9,10	87-021-846-01	Slide volume, 250kΩ-W(EQUALIZER VOL)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2,3,4,5,6	87-031-771-01	Tact switch(TUNER, TAPE, PHONE, CD, AUX)	
SW7,8,9	87-031-815-01	Push-switch(MUT, DSL, REC OUT)	
PIN2,3	87-049-366-01	Pin, 20P	★★★
		< Capacitor >	
C73,74,75,76,80	87-015-698-01	4.7μF 50V Electrolytic	
< GRAPHIC CIRCUIT BOARD SECTION >			
PCB-E	*	GRAPHIC circuit board	
Q11,12,13,14,15,16,17,18,19,20,21,22,23,24	89-318-155-01	Transistor, 2SC1815(GR)	
		< Capacitors >	
C43,44	87-015-697-01	3.3μF 50V Electrolytic	
C47,48	87-015-695-01	1μF 50V Electrolytic	
C51,52	87-015-693-01	0.33μF 50V Electrolytic	
C55,56	87-015-691-01	0.1μF 50V Electrolytic	
C57,58	87-018-044-01	1000pF Ceramic	
C61,62	87-018-040-81	470pF Ceramic	
C65,66	87-018-035-81	180pF Ceramic SL	

Symbol No.	Part No.	Description	Remark
< POWER CIRCUIT BOARD SECTION >			
⚠PCB-F	*	Power circuit board (H, HB models only)	
⚠PCB-F	*	Power circuit board (UB, E, EB, K, KB, G models only)	
⚠F1	87-035-256-01	Fuse, 3.15A (H, HB models only)	
⚠F1	87-035-302-01	Fuse, 3.15A (UB model only)	
⚠F1	87-035-224-01	Fuse, 1.6A "T" (E, EB, K, KB, G models only)	
⚠F2	87-035-252-01	Fuse, 1.6A (H, HB models only)	
⚠S1	87-031-586-01	Rotary switch(VOLTAGE SELECTOR) (H, HB models only)	
	87-098-045-01	Fuse label 3.15A (H, HB, UB models only)	
	87-098-018-01	Fuse label 1.6A "T" (E, EB, K, KB, G models only)	★★★
	87-098-042-01	Fuse label 1.6A (H, HB models only)	★★★
⚠	87-033-147-01	Fuse clamp	
< MISCELLANEOUS >			
⚠T1	82-798-617-01	Power transformer (H, HB models only)	
⚠T1	82-798-618-01	Power transformer (UB models only)	
⚠T1	82-798-619-01	Power transformer (E, EB models only)	
⚠T1	82-798-620-01	Power transformer (K, KB, G models only)	
⚠	87-034-962-01	AC power cord (H model only)	
⚠	87-034-992-01	AC power cord (HB model only)	
⚠	87-034-578-01	AC power cord (UB model only)	
⚠	82-788-674-01	AC power cord (E, EB models only)	
⚠	87-034-708-01	AC power cord (K, KB, G models only)	
⚠	87-085-184-01	Cord bushing (H, HB models only)	
⚠	87-085-189-01	Cord bushing (UB model only)	
⚠	87-085-185-01	Cord bushing (E, EB, KB, G models only)	

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board A 82-798-602-11
PCB-A 82-798-604-11
PCB-B 82-798-605-11
PCB-F 82-798-608-11 (H, HB models only)
PCB-F 82-798-607-11 (U, E, EB, K, KB, G models only)

Combination circuit board B 82-798-609-11
PCB-C 82-798-612-11
PCB-D 82-798-610-11
PCB-E 82-798-611-11

ELECTRICAL MAIN PARTS LIST

" ★★★ " shows unavailable Repair Part.

< TUNER CIRCUIT BOARD SECTION >

Symbol No.	Part No.	Description	Remark
PCB-A	*	Tuner circuit board	
IC1	87-020-140-01	IC, L78M12	
IC2	87-027-993-01	IC, μPC1167C2	
IC3	87-027-996-01	IC, LA1245	
IC4	87-020-139-01	IC, LA3390	
IC5,6	87-027-840-01	IC, M54519P	
Q1	87-026-165-01	FET, 3SK73(GR)	
Q2.3	89-319-233-01	Transistor, 2SC1923(O)	
Q4.5.15	89-501-615-01	FET, 2SK161(GR)	
Q6	89-318-154-01	Transistor, 2SC1815(Y)	
Q7.12	89-502-464-01	FET, 2SK246(Y)	
Q8,9	89-318-155-01	Transistor, 2SC1815(GR)	
Q10	89-110-154-01	Transistor, 2SA1015(Y)	
Q11.13	89-320-011-01	Transistor, 2SC2001(K)	
Q14	89-318-464-01	Transistor, 2SC1846(R)	
Q16.17	89-320-011-01	Transistor, 2SC2001(K) (E, EB, K, KB models only)	
D1,2,3,4	87-027-900-01	Diode, 1SV147	
D101,102,104, 105.106	87-027-097-01	Diode, 1S1555	
D103	87-027-376-01	Diode, 1B4B41	
D107	82-769-617-01	Diode, KV-1236Z-2	
D108	87-027-097-01	Diode, 1S1555 (E, EB, K, KB models only)	
L1	82-791-630-01	FM antenna coil	
L2	82-791-631-01	FM antenna coil	
L3.5.6	82-791-629-01	FM antenna coil	
L4	82-791-627-01	FM antenna coil	
L7.9	87-005-151-01	Choke coil, 2.2μH	
L8	82-791-633-01	FM OSC coil	
TC1.2	87-011-142-01	Trimmer, 10P	
TC201	87-011-108-01	Trimmer, 8P	
TC202	87-011-131-01	Trimmer, 30P (E, EB, K, KB models only)	
LPF1.2	82-794-684-01	Low-pass filter	
CF1.2.3	82-785-669-01	Ceramic filter, MA8H(R)	
CF4	82-795-675-01	Ceramic filter, MA, 450(129)	
CF5	82-794-670-01	Ceramic filter, BFU450C4N	
T1	82-794-683-01	FM IFT, 6T	
T2	82-794-695-01	FM quad coil(P)	
T3	82-794-696-01	FM quad coil(S)	
T4	82-794-699-01	MW antenna coil	
T5	82-794-687-01	MW OSC coil	
T7	82-794-700-01	LW antenna coil (E, EB, K, KB models only)	
T8	82-794-688-01	LW OSC coil (E, EB, K, KB models only)	
J1.2	82-799-632-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (H, HB, UB, G models only)	
J1.2	82-799-631-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (E, EB, models only)	
J1.2	82-799-634-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (K, KB models only)	
SW20	82-795-624-01	Slide switch (AM STEP) (H, HB, G models only)	
SFR1	87-021-742-01	Semi-fixed resistor, 10kΩ-B	
SFR2	87-021-743-01	Semi-fixed resistor, 22kΩ-B	
SFR3	87-021-689-01	Semi-fixed resistor, 47kΩ-B	
CN1	87-049-275-01	Pin, 5P	★★★
CN2.3	87-032-967-01	Pin, 7P	★★★
CN4.5	87-032-966-01	Pin, 6P	★★★

Symbol No.	Part No.	Description	Remark
		< Capacitors >	
C1.11	87-018-014-01	18pF Ceramic	
C2,8,10,14, 15,16,17,18, 101,102,103, 105,106,107, 111,132,133, 144,146,147, 205,209,211, 212,217,219, 221	87-018-047-01	0.01μF 16V Ceramic	
C3.6	87-018-010-01	12pF Ceramic	
C4	87-018-002-01	2.2pF Ceramic	
C5	87-018-005-01	4.7pF Ceramic	
C7	87-018-032-01	100pF Ceramic	
C9	87-018-001-01	1pF Ceramic	
C12	87-018-026-01	56pF Ceramic	
C104,201,214, 215	87-012-105-01	0.022μF Ceramic	
C110	87-018-038-01	330pF Ceramic	
C116	87-014-057-01	1000pF PP	
C118.120	87-014-056-01	910pF PP	
C124.126	87-018-045-01	2200pF Ceramic	
C131,145,213, 218	87-018-044-01	1000pF Ceramic	
C139	87-010-043-01	47μF 35V Electrolytic (UB model only)	
C140	87-010-045-01	100μF 25V Electrolytic (UB model only)	
C203	87-018-018-01	27pF Ceramic (H, HB, UB, G models only)	
C203	87-018-017-01	24pF Ceramic (E, EB, K, KB models only)	
C204	87-014-049-01	470pF PP	
C223	87-014-049-01	470pF PP (E, EB, K, KB models only)	
C224	87-018-030-01	82pF Ceramic (E, EB, K, KB models only)	

< CONTROL CIRCUIT BOARD SECTION >

Symbol No.	Part No.	Description	Remark
PCB-B	*	Control circuit board	
⊕IC1	87-020-232-01 (87-027-997-01)	IC, μPD1704C-026 (IC, μPD1704C-018)	
IC2	87-027-994-01	IC, AN6873	
IC3	87-020-129-01	IC, LB1423	
IC4	87-027-752-01	IC, 553AC	
⊕IC5.6	87-020-096-01	IC, M4066BP	
Q301	89-318-154-01	Transistor, 2SC1815(Y)	
Q302,303	89-110-154-01	Transistor, 2SA1015(Y)	
Q304	89-110-154-01	Transistor, 2SA1015(Y) (H, HB, UB, G models only)	
D301	87-020-130-01	LED, GL-9PG24 (POWER)	
D302,303,304, 305,306	87-020-127-01	LED, GL-9PR24 (SIGNAL 1~5)	
D307	87-020-152-01	LED, GL-9PG24 (FM STEREO)	
D308,309	87-020-153-01	LED, GL-9PG26 (FM MUTE, HI-BLEND)	
D310,311,312, 313,314,315, 316,317,318, 319,320,321, 322,328,329, 330	87-027-097-01	Diode, 1S1555	
D326,327,	87-027-097-01	Diode, 1S1555 (H, HB, UB, G models only)	
FL	82-795-620-01	FL, 9MT21ZK	
X1	82-769-613-01	Crystal, 4.5M	
TC301	87-011-131-01	Trimmer, 30P	
SW1,2,3,4,5, 6,7,8,9, 10,11,12, 13,14,15	87-031-771-01	Tact switch (PRESET, STATION 1~6, MEMORY/TIME SET, TIME/FREQ, SLEEP,TIMER, STANDBY, FM, AM, DOWN, UP)	
SW13.16	87-031-771-01	Tact switch (MW, LW) (E, EB, K, KB models only)	
SW17,18	87-031-760-01	Push switch (FM MUTE, HI-BLEND)	
SW19	87-031-750-01	Push switch (POWER)	
		< Capacitors >	
C301	87-015-990-01	2200μF 6.3V Electrolytic	
C302	87-018-020-01	33pF Ceramic	
C300,305,307, 308,309,310, 318,319,320	87-018-047-01	0.01μF 16V Ceramic	
C311,312,313, 314,315,316, 317	87-018-040-01	470pF Ceramic	

< POWER CIRCUIT BOARD SECTION > = "E, EB, K, KB, G" models

Symbol No.	Part No.	Description	Remark
⚠PCB-C	82-799-613-01	Power circuit board	
⚠J3.4.5	87-049-414-01	AC outlet (E, EB models only)	
⚠J3.4.5	87-049-416-01	AC outlet (K, KB, G models only)	
⚠F1	87-035-139-01	Fuse, "T" 2.5A (E, EB models only)	
⚠	87-033-147-01	Fuse clamp (E, EB models only)	

< MISCELLANEOUS >

Symbol No.	Part No.	Description	Remark
⚠T1	82-799-604-01	Power transformer (H, HB models only)	
⚠T1	82-799-602-01	Power transformer (UB model only)	
⚠T1	82-799-603-01	Power transformer (E, EB, K, KB, G models only)	
⚠SW21	87-031-617-01	Slide switch (AC VOLTAGE SELECTOR) (H, HB models only)	
⚠	87-034-956-01	AC power cord (H model only)	
⚠	87-034-958-01	AC power cord Black (HB model only)	
⚠	87-034-578-01	AC power cord Black (UB model only)	
⚠	87-034-877-01	AC power cord (E, EB models only)	
⚠	87-034-975-01	AC power cord (K, KB models only)	
⚠	87-034-892-01	AC power cord (G model only)	
⚠J3.4.5	87-049-365-01	AC outlet 3P UNSW (H, HB, UB models only)	
⚠	87-085-184-01	Cord bushing (H, HB, UB models only)	
⚠	87-085-185-01	Cord bushing (E, EB, K, KB, G models only)	

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 82-799-610-21
PCB-A 82-799-611-21
PCB-B 82-799-612-21

ws unavailable Repair Part.

Remark

R D

)

(E. EB. K.

K. KB

KB models

1 2 9)
1 N

KB models

KB models

UT. RE-
NT)

UT.
ANT)

UT.
ANT)

. HB. G

★ ★ ★
★ ★ ★
★ ★ ★

Symbol No.	Part No.	Description	Remark
		< Capacitors >	
C1.11	87-018-014-01	18pF Ceramic	
C2.8.10.14. 15.16.17.18. 101.102.103. 105.106.107. 111.132.133. 144.146.147. 205.209.211. 212.217.219. 221	87-018-047-01	0.01μF 16V Ceramic	
C3.6	87-018-010-01	12pF Ceramic	
C4	87-018-002-01	2.2pF Ceramic	
C5	87-018-005-01	4.7pF Ceramic	
C7	87-018-032-01	100pF Ceramic	
C9	87-018-001-01	1pF Ceramic	
C12	87-018-026-01	56pF Ceramic	
C104.201.214. 215	87-012-105-01	0.022μF Ceramic	
C110	87-018-038-01	330pF Ceramic	
C116	87-014-057-01	1000pF PP	
C118.120	87-014-056-01	910pF PP	
C124.126	87-018-045-01	2200pF Ceramic	
C131.145.213. 218	87-018-044-01	1000pF Ceramic	
C139	87-010-043-01	47μF 35V Electrolytic (UB model only)	
C140	87-010-045-01	100μF 25V Electrolytic (UB model only)	
C203	87-018-018-01	27pF Ceramic (H. HB. UB. G models only)	
C203	87-018-017-01	24pF Ceramic (E. EB. K. KB models only)	
C204	87-014-049-01	470pF PP	
C223	87-014-049-01	470pF PP (E. EB. K. KB models only)	
C224	87-018-030-01	82pF Ceramic (E. EB. K. KB models only)	

< CONTROL CIRCUIT BOARD SECTION >

Symbol No.	Part No.	Description	Remark
PCB-B	*	Control circuit board	
⊕IC1	87-020-232-01 (87-027-997-01)	IC. μPD1704C-026 (IC. μPD1704C-018)	
IC2	87-027-994-01	IC. AN6873	
IC3	87-020-129-01	IC. LB1423	
IC4	87-027-752-01	IC. 553AC	
⊕IC5.6	87-020-096-01	IC. M4066BP	
Q301	89-318-154-01	Transistor. 2SC1815(Y)	
Q302.303	89-110-154-01	Transistor. 2SA1015(Y)	
Q304	89-110-154-01	Transistor. 2SA1015(Y) (H. HB. UB. G models only)	
D301	87-020-130-01	LED. GL-9PG24 (POWER)	
D302.303.304. 305.306	87-020-127-01	LED. GL-9PR24 (SIGNAL 1~5)	
D307	87-020-152-01	LED. GL-9PG24 (FM STEREO)	
D308.309	87-020-153-01	LED. GL-9PG26 (FM MUTE. HI-BLEND)	
D310.311.312. 313.314.315. 316.317.318. 319.320.321. 322.328.329. 330	87-027-097-01	Diode. 1S1555	

Symbol No.	Part No.	Description	Remark
D326.327.	87-027-097-01	Diode. 1S1555 (H. HB. UB. G models only)	
FL	82-795-620-01	FL. 9MT21ZK	
X1	82-769-613-01	Crystal. 4.5M	
TC301	87-011-131-01	Trimmer. 30P	
SW1.2.3.4.5. 6.7.8.9. 10.11.12. 13.14.15	87-031-771-01	Tact switch (PRESET. STATION 1~6. MEMORY/TIME SET. TIME/FREQ. SLEEP.TIMER. STANDBY. FM. AM. DOWN. UP)	
SW13.16	87-031-771-01	Tact switch (MW. LW) (E. EB. K. KB models only)	
SW17.18	87-031-760-01	Push switch (FM MUTE. HI-BLEND)	
SW19	87-031-750-01	Push switch (POWER)	
		< Capacitors >	
C301	87-015-990-01	2200μF 6.3V Electrolytic	
C302	87-018-020-01	33pF Ceramic	
C300.305.307. 308.309.310. 318.319.320	87-018-047-01	0.01μF 16V Ceramic	
C311.312.313. 314.315.316. 317	87-018-040-01	470pF Ceramic	

< POWER CIRCUIT BOARD SECTION > = "E. EB. K. KB. G" models

Symbol No.	Part No.	Description
⚠PCB-C	82-799-613-01	Power circuit board
⚠J3.4.5	87-049-414-01	AC outlet (E. EB models only)
⚠J3.4.5	87-049-416-01	AC outlet (K. KB. G models only)
⚠F1	87-035-139-01	Fuse. "T" 2.5A (E. EB models only)
⚠	87-033-147-01	Fuse clamp (E. EB models only)

< MISCELLANEOUS >

Symbol No.	Part No.	Description
⚠T1	82-799-604-01	Power transformer (H. HB models only)
⚠T1	82-799-602-01	Power transformer (UB model only)
⚠T1	82-799-603-01	Power transformer (E. EB. K. KB. G models only)
⚠SW21	87-031-617-01	Slide switch (AC VOLTAGE SELECTOR) (H. HB models only)
⚠	87-034-956-01	AC power cord (H model only)
⚠	87-034-958-01	AC power cord Black (HB model only)
⚠	87-034-578-01	AC power cord Black (UB model only)
⚠	87-034-877-01	AC power cord (E. EB models only)
⚠	87-034-975-01	AC power cord (K. KB models only)
⚠	87-034-892-01	AC power cord (G model only)
⚠J3.4.5	87-049-365-01	AC outlet 3P UNSW (H. HB. UB models only)
⚠	87-085-184-01	Cord bushing (H. HB. UB models only)
⚠	87-085-185-01	Cord bushing (E. EB. K. KB. G models only)

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary,please order the entire circuit board.

Combination circuit board 82-799-610-21
PCB-A 82-799-611-21
PCB-B 82-799-612-21

ELECTRICAL MAIN PARTS LIST

"★★★" shows unavailable Repair Part.

<MAIN CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-A	*	Main circuit board	
IC1	87-027-925-01	IC, M5220	
IC2	87-027-978-01	IC, TC9152P	
IC3	87-020-145-01	IC, M54563	
IC4	87-020-216-01	IC, M51133P	
IC5	87-027-895-01	IC, M5218L	
⊕IC6	87-027-828-01	IC, TC9134P	
⊕IC7.8.9	87-027-723-01	IC, TC4049BP	
IC10	87-027-948-01	IC, M54514AP	
Q1.2	89-318-156-01	Transistor, 2SC1815(BL)	
Q3.4.5.6.9.10.11.12.13.14.17.18.20.24.55.56.57.58.61.62	89-318-155-01	Transistor, 2SC1815(GR)	
Q7	89-413-023-01	Transistor, 2SD1302S	
Q15.16	89-320-011-01	Transistor, 2SC2001K	
Q19.23	89-414-064-51	Transistor, 2SD1406(Y, GR)	
Q21	89-107-335-01	Transistor, 2SA733K	
Q22	89-210-154-51	Transistor, 2SB1015(Y, GR)	
Q25	89-502-464-01	FET, 2SK246Y	
Q59.60	89-110-155-01	Transistor, 2SA1015(GR)	
D1.40	87-027-606-01	Zener diode, HZ7C2L	
D2.3.4.5.6.7.8.9.10.11.12.14.15.16.17.18.19.21.22.23.24.25.26.29.30.32.41.42.64	87-027-097-01	Diode, 1S1555	
D13.31.63	87-027-332-01	Zener diode, HZ6B1L	
D28	87-027-416-01	Zener diode, HZ3C2	
D34	87-027-376-01	Diode, 1B4B41	
D35.37.38	87-027-365-01	Diode, S5277B	
D36	87-027-449-01	Zener diode, HZ15-3L	
D39	87-027-364-01	Zener diode, HZ12A3L	
J1.2.3.4.5.6.7.8.9.	81-731-614-01	Pin jack ass'y(PHONO, CD, AUX, REC OUT, SIGNAL EARTH, PLAYER SYNC)	
J10.11.12.13.14.15.16	81-731-616-01	DIN jack ass'y(TUNER, REC/PLAY, CONTROL, TUNER, CONTROL, DECK CONTROL, PLAYER START/CUT, OUTPUT)	
X1	87-008-246-01	Ceramic resonator CSB455EB	
PIN1	87-032-897-01	Pin, 3P	★★★
PIN2	87-049-276-01	Pin, 6P	★★★
PIN3	87-032-903-01	Pin, 3P	★★★
PIN4.7	87-049-277-01	Pin, 7P	★★★
PIN5.6	87-049-278-01	Pin, 8P	★★★

<Capacitors>

Symbol No.	Part No.	Description	Remark
C1.2	87-018-036-01	220pF Ceramic	
C3.4	87-015-953-01	4.7μF 35V Electrolytic LL	
C5.6.25.26	87-018-024-01	47pF Ceramic	
C52.53	87-018-032-01	100pF Ceramic	
C54.55.56	87-015-421-01	0.22μF 25V Aluminum solid	
C73.149	87-018-047-01	0.01μF 16V Ceramic	

<FRONT CIRCUIT BOARAD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-B	*	Front circuit board	
Q41.42.43.44.45.46.47.48.49.50.51.52.53.54	89-318-155-01	Transistor, 2SC1815(GR)	

<Capacitors>

Symbol No.	Part No.	Description	Remark
C89.90	87-015-697-01	3.3μF 50V Electrolytic	
C93.94	87-015-695-01	1μF 50V Electrolytic	
C97.98	87-015-693-01	0.33μF 50V Electrolytic	
C101.102	87-015-691-01	0.1μF 50V Electrolytic	
C103.104	87-018-044-01	1000pF Ceramic	
C107.108	87-018-040-01	470pF Ceramic	
C111.112	87-018-035-01	180pF Ceramic	

<GEQ CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-C	*	GEQ circuit board	
IC13	87-027-895-01	IC, M5218L	
D50.51.52.53.54	87-027-097-01	Diode, 1S1555	
D55.56.57.58.59	87-027-543-01	LED, LN317GP(TAPE, TUNER, PHONO, CD, AUX)	
D60.61.62	87-020-128-01	LED, GL-2PR2(DSL, REC OUT, MUTING)	
VR3.4.5.6.7.8.9	87-021-846-01	Slide volume, 250kΩ-W(GRAPHIC EQUALIZER : 40Hz, 125Hz, 330Hz, 1kHz, 2.5kHz, 6.3kHz, 15kHz)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2.3.4	81-731-635-01	Push-switch(MUTING, DSL, REC OUT)	
SW5.6.7.8.9	87-031-771-01	Tact switch(TAPE, TUNER, PHONO, CD, AUX)	
CON2	81-731-621-01	Connector ass'y, 6P	★★★
CON4	81-731-652-01	Connector ass'y, 7P	★★★
CON5	81-731-622-01	Connector ass'y, 8P	★★★

<Capacitors>

Symbol No.	Part No.	Description	Remark
C81.82.85.86	87-015-698-01	4.7μF 50V Electrolytic	
C83.84	87-015-681-01	10μF 16V Electrolytic	

<MIC CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-D	*	MIC circuit board	
IC12	87-027-895-01	IC, M5218L	
VR1	87-021-848-01	Volume, 50kΩ-B(MIC VOL)	
VR2	81-731-636-01	Volume, 100kΩ-RW(BALANCE)	
J17	87-049-353-01	Jack, 6.3φ W/switch(MIX MIC)	
CON6	81-731-622-01	Connector ass'y, 8P	★★★

<Capacitors>

Symbol No.	Part No.	Description	Remark
C133	87-018-042-01	680pF Ceramic	
C135	87-018-044-01	1000pF Ceramic	

<LED CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-E	*	LED circuit board	
IC11	87-020-217-01	IC, BA684A	
D70.71.72.73 74.75.76.77	87-020-219-01	LED, GL-3PG2(LEVEL INDICATOR)	
D78	87-020-218-01	LED, GL-3PR2(RECEIVED)	
SW10.11	87-031-771-01	Tact switch(VOLUME DOWN, VOLUME UP)	
CON7	81-731-620-01	Connector ass'y, 7P	★★★

<Capacitor>

Symbol No.	Part No.	Description	Remark
C130	87-018-047-01	0.01μF 16V Ceramic	

<SWITCH CIRCUIT BOARD SECTION> = "H, HB" models

Symbol No.	Part No.	Description	Remark
⚠PCB-F	*	Switch circuit board	
⚠SW12	87-031-551-01	Rotary switch(AC VOLTAGE SELECTOR)	
⚠J18	87-049-017-01	AC outlet	
⚠	82-304-743-01	1P terminal	★★★

<FUSE CIRCUIT BOARD SECTION> = "E, EB" models

Symbol No.	Part No.	Description	Remark
⚠PCB-G	81-731-644-11	Fuse circuit board	
⚠F1	87-035-139-01	Fuse, "T" 2.5A	
⚠	87-033-147-01	Fuse clamp	★★★
⚠J18	87-049-414-01	AC outlet	
⚠	82-304-743-01	1P terminal	★★★

<COMMAND CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-H	81-731-655-01	Command circuit board	
IC1	87-027-831-01	TC-9132P	
Q1	89-206-412-01	Transistor, 2SB641(R)	
Q2	89-406-372-01	Transistor, 2SD637(R)	
D1.2	87-027-849-01	LED, LN66 (LED SE303A)	
X1	87-008-246-01	Ceramic resonator, CS-B455EB1	

<KEY SWITCH CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-I	81-731-656-01	Key switch circuit board	
SW4.5.6.7.11.13.14.17.18.19.20.21.22.23.24.25.26.27.28.30.31	86-198-601-01	Rubber switch [TAPE, PHONO, AUX, CD, REV PLAY(◀), START/CUT, PLAY(▶), PAUSE, STOP, TUNER REC, VOLUME UP(▶), VOLUME DOWN(◀), FM, TUNING DOWN, UP, LW (EB, K, KB models only) ◀◀, ▶▶, MUTING, POWER, AM(MW)]	

<MISCELLANEOUS>

Symbol No.	Part No.	Description	Remark
⚠T1	81-731-606-01	Power transformer(H, HB models only)	
⚠T1	81-731-607-01	Power transformer(UB model only)	
⚠T1	81-731-608-01	Power transformer(E, EB models only)	
⚠T1	81-731-609-01	Power transformer(K, KB, G models only)	
⚠	87-034-962-01	AC power cord H50(H, HB models only)	
⚠	87-034-578-01	AC power cord U black(UB model only)	
⚠	82-788-674-01	AC power cord E50(E, EB models only)	
⚠	82-788-673-01	AC power cord K50(K, KB, G models only)	
⚠J18	87-049-017-01	AC outlet(UB model only)	
⚠J18	87-032-996-01	AC outlet(K, KB, G models only)	
⚠	87-085-184-01	Cord bushing(H, HB, UB models only)	
⚠	87-085-185-01	Cord bushing(E, EB, K, KB, G models only)	
CP1, CON3	81-731-633-01	Photo transistor amp. unit EUR-3619A	

N
Th
as
Th
ne

C
P
P
P

C
P
P
P

"★★★" shows unavailable Repair Part.

cription	Remark
ARD N >	
P	
P	
1815(BL)	
1815(GR)	
1302S	
2001K	
1406(Y, GR)	
733K	
1015(Y, GR)	
Y	
1015(GR)	
C2L	
B1L	
C2	
5-3L	
2A3L	
ONO, CD, AUX, GNAL EARTH,)	
UNER, REC/PLAY, NER, CONTROL, L, PLAYER OUTPUT)	
SB455EB	
	★★★
	★★★
	★★★
	★★★
	★★★
rs >	
Ceramic	
V Electrolytic LL	
Ceramic	
Ceramic	
V Aluminum solid	
V Ceramic	
OARAD N >	
815(GR)	

Symbol No.	Part No.	Description	Remark
49.50.51.52, 53.54			
		<Capacitors>	
C89,90	87-015-697-01	3.3μF 50V Electrolytic	
C93,94	87-015-695-01	1μF 50V Electrolytic	
C97,98	87-015-693-01	0.33μF 50V Electrolytic	
C101,102	87-015-691-01	0.1μF 50V Electrolytic	
C103,104	87-018-044-01	1000pF Ceramic	
C107,108	87-018-040-01	470pF Ceramic	
C111,112	87-018-035-01	180pF Ceramic	

<GEQ CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-C	*	GEQ circuit board	
IC13	87-027-895-01	IC, M5218L	
D50,51,52,53, 54	87-027-097-01	Diode, 1S1555	
D55,56,57,58, 59	87-027-543-01	LED, LN317GP(TAPE, TUNER, PHONO, CD, AUX)	
D60,61,62	87-020-128-01	LED, GL-2PR2(DSL, REC OUT, MUTING)	
VR3.4.5.6.7, 8.9	87-021-846-01	Slide volume, 250kΩ-W(GRAPHIC EQUALIZER : 40Hz, 125Hz, 330Hz, 1kHz, 2.5kHz, 6.3kHz, 15kHz)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2.3.4	81-731-635-01	Push-switch(MUTING, DSL, REC OUT)	
SW5.6.7.8.9	87-031-771-01	Tact switch(TAPE, TUNER, PHONO, CD, AUX)	
CON2	81-731-621-01	Connector ass'y, 6P	★★★
CON4	81-731-652-01	Connector ass'y, 7P	★★★
CON5	81-731-622-01	Connector ass'y, 8P	★★★
		<Capacitors>	
C81,82,85,86	87-015-698-01	4.7μF 50V Electrolytic	
C83,84	87-015-681-01	10μF 16V Electrolytic	

<MIC CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-D	*	MIC circuit board	
IC12	87-027-895-01	IC, M5218L	
VR1	87-021-848-01	Volume, 50kΩ-B(MIC VOL)	
VR2	81-731-636-01	Volume, 100kΩ-RW(BALANCE)	
J17	87-049-353-01	Jack, 6.3φ W/switch(MIX MIC)	
CON6	81-731-622-01	Connector ass'y, 8P	★★★
		<Capacitors>	
C133	87-018-042-01	680pF Ceramic	
C135	87-018-044-01	1000pF Ceramic	

<LED CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-E	*	LED circuit board	
IC11	87-020-217-01	IC, BA684A	
D70,71,72,73 74,75,76,77	87-020-219-01	LED, GL-3PG2(LEVEL INDICATOR)	
D78	87-020-218-01	LED, GL-3PR2(RECEIVED)	
SW10,11	87-031-771-01	Tact switch(VOLUME DOWN, VOLUME UP)	
CON7	81-731-620-01	Connector ass'y, 7P	★★★

Symbol No.	Part No.	Description	Remark
		<Capacitor>	
C130	87-018-047-01	0.01μF 16V Ceramic	

<SWITCH CIRCUIT BOARD SECTION> = "H, HB" models

Symbol No.	Part No.	Description	Remark
⚠PCB-F	*	Switch circuit board	
⚠SW12	87-031-551-01	Rotary switch(AC VOLTAGE SELECTOR)	
⚠J18	87-049-017-01	AC outlet	
⚠	82-304-743-01	1P terminal	★★★

<FUSE CIRCUIT BOARD SECTION> = "E, EB" models

Symbol No.	Part No.	Description	Remark
⚠PCB-G	81-731-644-11	Fuse circuit board	
⚠F1	87-035-139-01	Fuse, "T" 2.5A	
⚠	87-033-147-01	Fuse clamp	★★★
⚠J18	87-049-414-01	AC outlet	
⚠	82-304-743-01	1P terminal	★★★

<COMMAND CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-H	81-731-655-01	Command circuit board	
IC1	87-027-831-01	TC-9132P	
Q1	89-206-412-01	Transistor, 2SB641(R)	
Q2	89-406-372-01	Transistor, 2SD637(R)	
D1,2	87-027-849-01	LED, LN66 (LED SE303A)	
X1	87-008-246-01	Ceramic resonator, CS-B455EB1	

<KEY SWITCH CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-I	81-731-656-01	Key switch circuit board	
SW4,5,6,7, 11,13,14, 17,18,19, 20,21,22, 23,24,25, 26,27,28, 30,31	86-198-601-01	Rubber switch [TAPE, PHONO, AUX, CD, REV PLAY(◀), START/CUT, PLAY(▶), PAUSE, STOP, TUNER REC, VOLUME UP(▶), VOLUME DOWN(◀), FM, TUNING DOWN, UP, LW (EB, K, KB models only) ◀◀, ▶▶, MUTING, POWER, AM(MW)]	

<MISCELLANEOUS>

Symbol No.	Part No.	Description	Remark
⚠T1	81-731-606-01	Power transformer(H, HB models only)	
⚠T1	81-731-607-01	Power transformer(UB model only)	
⚠T1	81-731-608-01	Power transformer(E, EB models only)	
⚠T1	81-731-609-01	Power transformer(K, KB, G models only)	
⚠	87-034-962-01	AC power cord H50(H, HB models only)	
⚠	87-034-578-01	AC power cord U black(UB model only)	
⚠	82-788-674-01	AC power cord E50(E, EB models only)	
⚠	82-788-673-01	AC power cord K50(K, KB, G models only)	
⚠J18	87-049-017-01	AC outlet(UB model only)	
⚠J18	87-032-996-01	AC outlet(K, KB, G models only)	
⚠	87-085-184-01	Cord bushing(H, HB, UB models only)	
⚠	87-085-185-01	Cord bushing(E, EB, K, KB, G models only)	
CP1, CON3	81-731-633-01	Photo transistor amp. unit EUR-3619A	

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board A 81-731-640-11
PCB-A 81-731-641-11
PCB-E 81-731-642-11
PCB-F 81-731-643-11

Combination circuit board B 81-731-647-11
PCB-B 81-731-649-11
PCB-C 81-731-648-11
PCB-D 81-731-650-11

ELECTRICAL MAIN PARTS LIST

"★★★" shows unavailable Repair Part.

<MAIN CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-A	*	Main circuit board	
IC1.2	87-020-162-01	IC. STK1070	
IC5	87-027-787-01	IC. μPC1237H	
Q11. 12	89-318-154-01	Transistor. 2SC1815(Y)	
Q13	89-334-210-01	Transistor. 2SC3421	
Q14	89-113-580-01	Transistor. 2SA1358	
Q15	89-110-154-01	Transistor. 2SA1015(Y)	
D2.6	87-027-469-01	Zener diode. HZ16-2	
D9.10	87-027-097-01	Diode. 1S1555	
D15.16.17.18	87-027-402-01	Zener diode. HZ24-2L	
D19.20.21.22	87-027-626-01	Diode. S5277D	
D25.28	87-027-365-01	Diode. S5277B	
D23	87-027-788-01	Diode. D5FB20	
D24	87-027-376-01	Diode. 1B4B41	
L1.2	87-005-158-01	Inductor coil. 1μH	
RY-1	87-045-223-01	RelayG4W. 24V-2	
RY-2	87-045-224-01	RelayG2R. 24V-2	
J1	81-730-623-01	Jack Ass'y (INPUT. SPEAKER)	
SW1	87-031-822-01	Push-switch (INDICATOR)	
SW3.4	87-031-805-01	Push-switch (SPEAKER A. B)	
PIN1	87-032-897-01	Pin. 3P	★★★
PIN2	82-481-649-01	Pin. 2P	★★★
CON3	87-049-362-01	Connector ass'y. 7P	★★★
		<Resistors>	
R57.58	87-025-120-01	10Ω　1W　Metal film	
R59.60	87-025-193-01	10Ω　2W　Metal film	
⚠R123	87-029-361-01	3.3Ω　1/2W　Fuse resistor	
		<Capacitors>	
C53.54	87-015-914-01	47μF　100V　Electrolytic	
C55.56	87-015-916-01	22μF　100V　Electrolytic	
C57.58	87-015-945-01	15.000μF　56V　Electrolytic	
C60	87-015-450-01	220μF　25V　Electrolytic BP	
C61	89-652-615-01	1000pF　Ceramic	

<INDICATOR CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-B	*	Indicator circuit board	
IC3.4	87-020-161-01	IC. AN6891	
Q16.17	89-318-154-01	Transistor. 2SC1815(Y)	
Q18	89-206-051-21	Transistor. 2SB605K(L)	
Q19	89-405-711-21	Transistor. 2SD571K(L)	
D11.12.13.14. 27	87-027-097-01	Diode. 1S1555	
D26	87-027-499-01	Zener diode. HZ15-3	
D31.32.33.34. 35.36.37.38. 39.40.41.42	87-020-164-01	LED. Red. GL-106-R5	
D43.44.45.46. 47.48.49.50. 51.52	87-020-165-01	LED. Red. GL-105-R5	
D53.54	87-020-163-01	LED. Green. GL-9NG23	
D55	87-020-128-01	LED. Red. GL-2PR2	
⚠SW2	87-031-692-01	Push-switch (POWER)	
PIN3	87-049-361-01	Pin. 7P	★★★
		<Capacitors>	
C35.36.37.38. 39.40	87-015-698-01	4.7μF　50V　Electrolytic	

<DRIVER-1 CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-C	*	Driver-1 circuit board	
Q1	89-503-890-01	FET. 2SK389	
Q3	89-318-154-01	Transistor. 2SC1815(Y)	
Q5	89-333-810-01	Transistor. 2SC3381	
Q7	89-111-246-01	Transistor. 2SA1124R	
Q9 •	89-326-326-01	Transistor. 2SC2632(R)	
D1.5	87-027-469-01	Zener diode. HZ16-2	
D3.7	87-027-097-01	Diode. 1S1555	
SFR1	87-021-856-01	Semi-fixed resistor. 100Ω-B	
PIN4.5.6	87-049-113-01	Pin. 3P	★★★
		<Capacitor>	
C1	87-015-141-01	10μF　16V　Electrolytic BP	

<DRIVER-2 CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-D	*	Driver-2 circuit board	
Q2	89-503-890-01	FET. 2SK389	
Q4	89-318-154-01	Transistor. 2SC1815Y	
Q6	89-333-810-01	Transistor. 2SC3381	
Q8	89-111-246-01	Transistor. 2SA1124R	
Q10	89-326-326-01	Transistor. 2SC2632R	
D2.6	87-027-469-01	Zener diode. HZ16-2	
D4.8	87-027-097-01	Diode. 1S1555	
SFR2	87-021-856-01	Semi-fixed resistor. 100Ω-B	
PIN7.8.9	87-049-113-01	Pin. 3P	★★★
		<Capacitor>	
C2	87-015-141-01	10μF　16V　Electrolytic BP	

<JACK CIRCUIT BOARD SECTION>

Symbol No.	Part No.	Description	Remark
PCB-E	*	Jack circuit board	
J2	87-049-360-01	Jack. 6.3ø(PHONES)	
		<Resistor>	
R75.76	87-025-055-01	270Ω　2W　Metal film	

<FUSE-1 CIRCUIT BOARD SECTION> —"UB" MODEL

Symbol No.	Part No.	Description	Remark
PCB-F	*	Fuse-1 circuit board	
⚠F1	87-035-313-01	Fuse. 5A	
	87-098-324-01	Fuse label	★★★
⚠	87-033-147-01	Fuse clamp	★★★
⚠	82-304-743-01	1P terminal	★★★

<SWITCH CIRCUIT BOARD SECTION> ="H.HB" MODELS

Symbol No.	Part No.	Description	Remark
⚠PCB-G	*	Switch circuit board	
⚠F1	87-035-312-01	Fuse. 7A	
	87-098-074-01	Fuse label. 7A	
⚠F2	87-035-256-01	Fuse. 3.15A	
	87-098-045-01	Fuse label. 3.15A	★★★
⚠SW5	87-031-586-01	Rotary switch (VOLTAGE SELECTOR)	
⚠	87-033-147-01	Fuse clamp	
⚠	82-304-743-01	1P terminal	★★★

<FUSE-2 CIRCUIT BOARD SECTION> ="E.EB.K.KB.G" MODELS

Symbol No.	Part No.	Description	Remark
⚠PCB-H	*	Fuse-2 circuit board	
⚠F1	87-035-190-01	Fuse. "T" 2A	
	87-098-019-01	Fuse label. "T" 2A	
⚠	87-033-147-01	Fuse clamp	
⚠	82-304-743-01	1P terminal	★★★

<MISCELLANEOUS>

Symbol No.	Part No.	Description	Remark
⚠T1	81-730-606-01	Power transformer (H. HB. models only)	
⚠T1	81-730-607-01	Power transformer (UB model only)	
⚠T1	81-730-608-01	Power transformer (E. EB models only)	
⚠T1	81-730-609-01	Power transformer (K. KB. G models only)	
⚠	87-034-962-01	AC power cord (H model only)	
⚠	87-034-992-01	AC power cord (HB model only)	
⚠	87-034-578-01	AC power cord (UB model only)	
⚠	82-788-674-01	AC power cord (E. EB models only)	
⚠	87-034-708-01	AC power cord (K. KB. G models only)	
⚠	87-085-184-01	Cord bushing (H. HB. UB models only)	
⚠	87-085-185-01	Cord bushing (E. EB. K. KB. G models only)	
	82-798-601-01	Heatsink (H. HB. UB models only)	
	81-730-624-01	Heatsink. EL (E. EB. K. KB. G models only)	
	81-730-625-01	Heatsing. ER (E. EB. K. KB. G models only)	

⚠ Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

C-MOS IC handling precaution

The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260℃) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (⚡).

Note; Comb

The parts or
asterisk (*)
Therefore, th
necessary,ple

Combinatio

PCB-A 81
PCB-B 81
PCB-C 81
PCB-D 81
PCB-E 81
PCB-F 81
PCB-G 81
PCB-H 81

hows unavailable Repair Part.

Remark

)
AKER)
B)
★★★
★★★
★★★
l film
l film
resistor
ctrolytic
ctrolytic
ctrolytic
ctrolytic BP
amic
N >
★★★
rolytic

Symbol No.	Part No.	Description	Remark
		<DRIVER-1 CIRCUIT BOARD SECTION>	
PCB-C	*	Driver-1 circuit board	
Q1	89-503-890-01	FET. 2SK389	
Q3	89-318-154-01	Transistor. 2SC1815(Y)	
Q5	89-333-810-01	Transistor. 2SC3381	
Q7	89-111-246-01	Transistor. 2SA1124R	
Q9	89-326-326-01	Transistor. 2SC2632(R)	
D1.5	87-027-469-01	Zener diode. HZ16-2	
D3.7	87-027-097-01	Diode. 1S1555	
SFR1	87-021-856-01	Semi-fixed resistor. 100Ω-B	
PIN4.5.6	87-049-113-01	Pin. 3P	★★★
		<Capacitor>	
C1	87-015-141-01	10μF 16V Electrolytic BP	
		<DRIVER-2 CIRCUIT BOARD SECTION>	
PCB-D	*	Driver-2 circuit board	
Q2	89-503-890-01	FET. 2SK389	
Q4	89-318-154-01	Transistor. 2SC1815Y	
Q6	89-333-810-01	Transistor. 2SC3381	
Q8	89-111-246-01	Transistor. 2SA1124R	
Q10	89-326-326-01	Transistor. 2SC2632R	
D2.6	87-027-469-01	Zener diode. HZ16-2	
D4.8	87-027-097-01	Diode. 1S1555	
SFR2	87-021-856-01	Semi-fixed resistor. 100Ω-B	
PIN7.8.9	87-049-113-01	Pin. 3P	★★★
		<Capacitor>	
C2	87-015-141-01	10μF 16V Electrolytic BP	
		<JACK CIRCUIT BOARD SECTION>	
PCB-E	*	Jack circuit board	
J2	87-049-360-01	Jack. 6.3ø(PHONES)	
		<Resistor>	
R75.76	87-025-055-01	270Ω 2W Metal film	
		<FUSE-1 CIRCUIT BOARD SECTION> -"UB" MODEL	
PCB-F	*	Fuse-1 circuit board	
⚠F1	87-035-313-01	Fuse. 5A	
	87-098-324-01	Fuse label	★★★
⚠	87-033-147-01	Fuse clamp	★★★
⚠	82-304-743-01	1P terminal	★★★
		<SWITCH CIRCUIT BOARD SECTION> ="H.HB" MODELS	
⚠PCB-G	*	Switch circuit board	
⚠F1	87-035-312-01	Fuse. 7A	
	87-098-074-01	Fuse label. 7A	
⚠F2	87-035-256-01	Fuse. 3.15A	
	87-098-045-01	Fuse label. 3.15A	★★★
⚠SW5	87-031-586-01	Rotary switch (VOLTAGE SELECTOR)	
⚠	87-033-147-01	Fuse clamp	
⚠	82-304-743-01	1P terminal	★★★

Symbol No.	Part No.	Description	Remark
		<FUSE-2 CIRCUIT BOARD SECTION> ="E.EB.K.KB.G" MODELS	
⚠PCB-H	*	Fuse-2 circuit board	
⚠F1	87-035-190-01	Fuse. "T" 2A	
	87-098-019-01	Fuse label. "T" 2A	
⚠	87-033-147-01	Fuse clamp	
⚠	82-304-743-01	1P terminal	★★★
		<MISCELLANEOUS>	
⚠T1	81-730-606-01	Power transformer (H. HB. models only)	
⚠T1	81-730-607-01	Power transformer (UB model only)	
⚠T1	81-730-608-01	Power transformer (E. EB models only)	
⚠T1	81-730-609-01	Power transformer (K. KB. G models only)	
⚠	87-034-962-01	AC power cord (H model only)	
⚠	87-034-992-01	AC power cord (HB model only)	
⚠	87-034-578-01	AC power cord (UB model only)	
⚠	82-788-674-01	AC power cord (E. EB models only)	
⚠	87-034-708-01	AC power cord (K. KB. G models only)	
⚠	87-085-184-01	Cord bushing (H. HB. UB models only)	
⚠	87-085-185-01	Cord bushing (E. EB. K. KB. G models only)	
	82-798-601-01	Heatsink (H. HB. UB models only)	
	81-730-624-01	Heatsink. EL (E. EB. K. KB. G models only)	
	81-730-625-01	Heatsing. ER (E. EB. K. KB. G models only)	

⚠ **Safety component symbol**

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

C-MOS IC handling precaution

The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260℃) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (⚡).

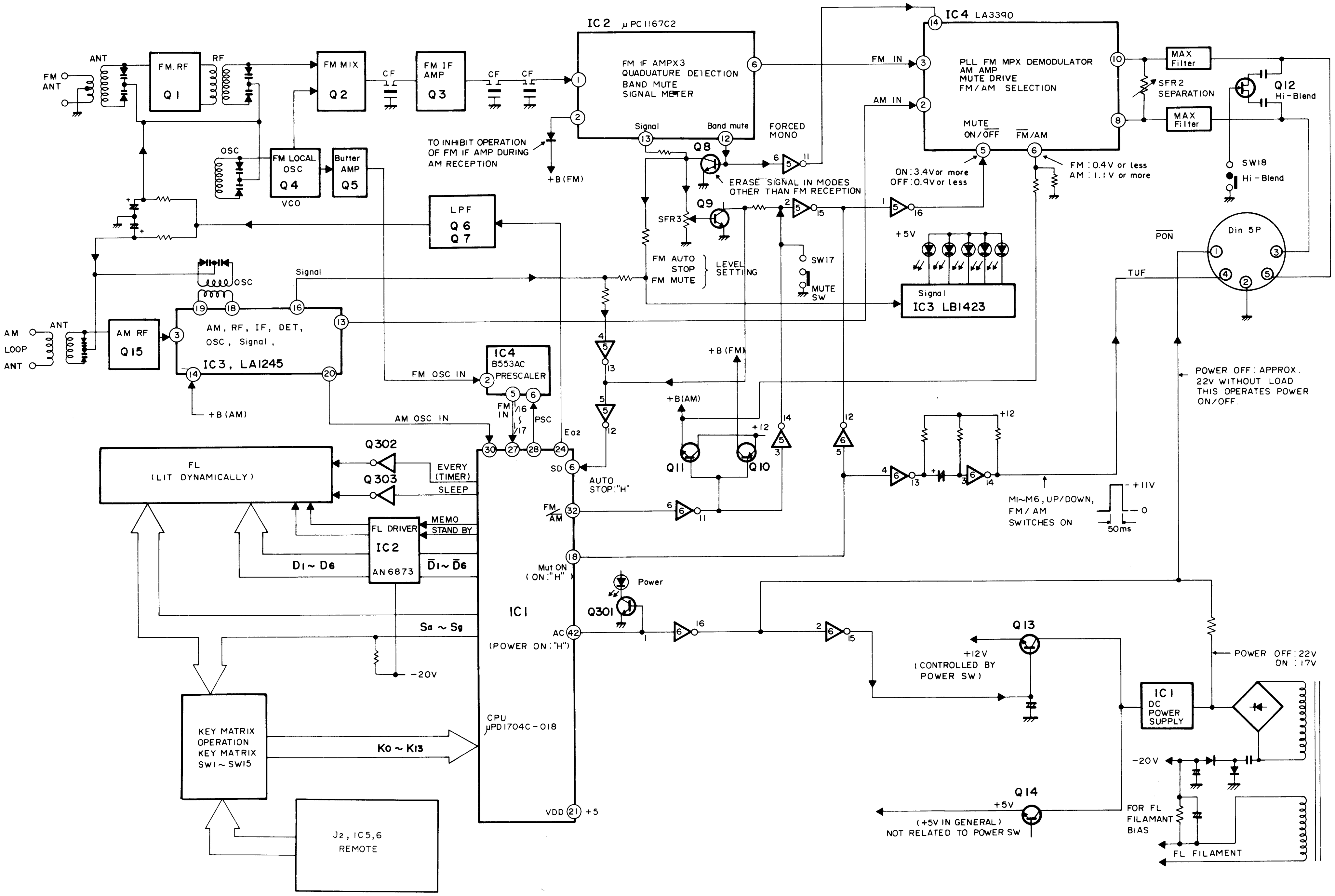
Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

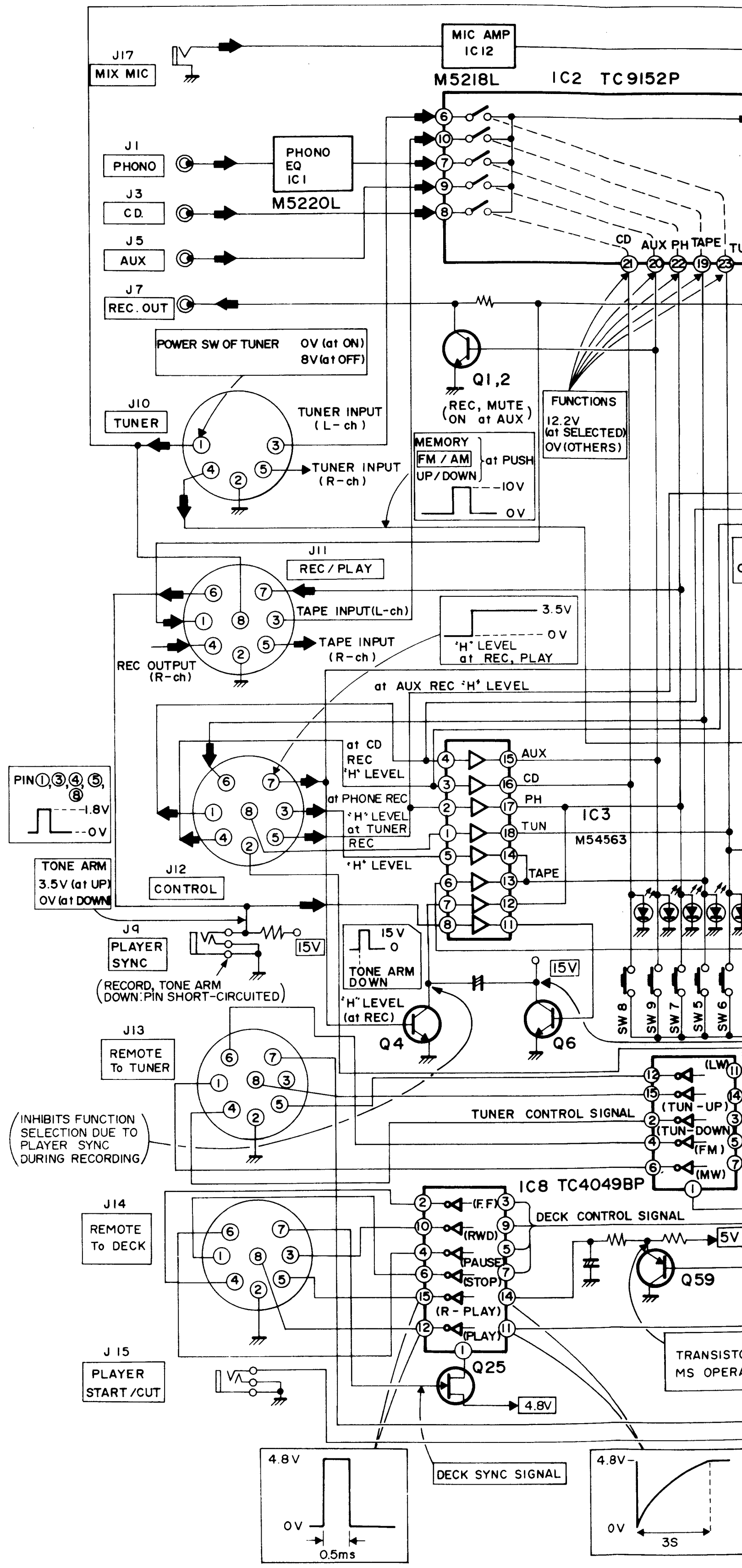
Combination circuit board	**81-730-610-11**
PCB-A	**81-730-611-11**
PCB-B	**81-730-612-01**
PCB-C	**81-730-616-01**
PCB-D	**81-730-617-01**
PCB-E	**81-730-613-01**
PCB-F	**81-730-614-01 (UB model only)**
PCB-G	**81-730-615-01 (H,HB models only)**
PCB-H	**81-730-618-01 (E,EB,K,KB,G models only)**

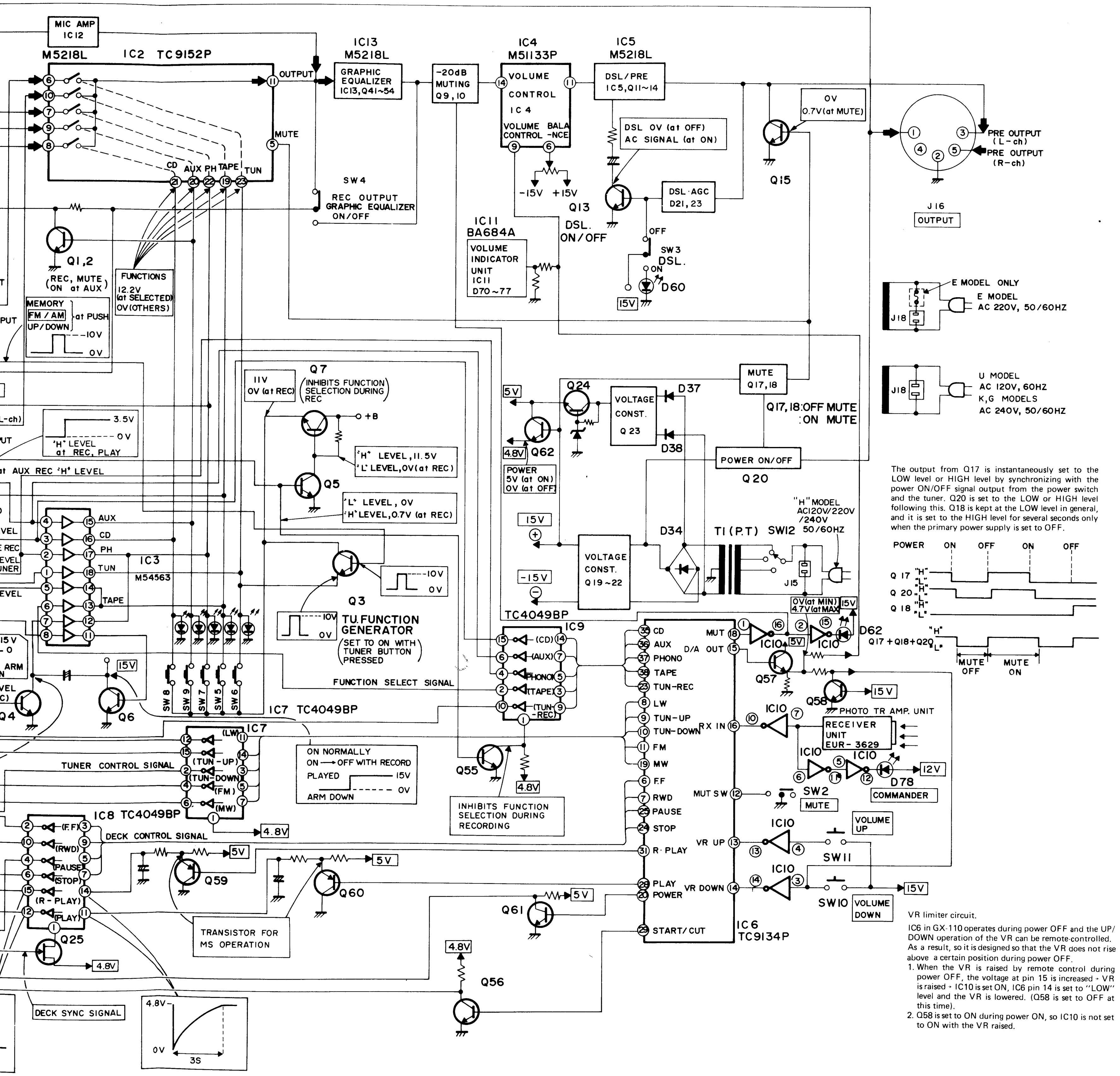
BLOCK DIAGRAM

•TX-110


FM ANT
ANT
FM RF
Q1
RF
FM MIX
Q2
CF
FM IF AMP
Q3
OSC
FM LOCAL OSC
Q4
VCO
Butter AMP
Q5
LPF
Q6
Q7
IC2 μPC1167C2
FM IF AMPX3
QUADUATURE DETECTION
BAND MUTE
SIGNAL METER
Signal
Band mute
TO INHIBIT OPERATION OF FM IF AMP DURING AM RECEPTION
+B (FM)
Q8
FORCED MONO
ERASE SIGNAL IN MODES OTHER THAN FM RECEPTION
Q9
SFR3
FM AUTO STOP
FM MUTE
LEVEL SETTING
SW17
MUTE SW
IC4 LA3390
PLL FM MPX DEMODULATOR
AM AMP
MUTE DRIVE
FM/AM SELECTION
FM IN
AM IN
MUTE ON/OFF
FM/AM
ON: 3.4V or more
OFF: 0.9V or less
FM: 0.4V or less
AM: 1.1V or more
MAX Filter
SFR2 SEPARATION
Q12
Hi-Blend
SW18
Hi-Blend
PON
Din 5P
TUF
+5V
Signal
IC3 LB1423
AM LOOP ANT
AM RF
Q15
AM, RF, IF, DET, OSC, Signal,
IC3, LA1245
+B (AM)
AM OSC IN
FM OSC IN
IC4
B553AC
PRESCALER
FM IN
PSC
Eo2
+B (FM)
+B (AM)
Q11
Q10
+12
AUTO STOP: "H"
SD
FM/AM
Mut ON (ON: "H")
AC
(POWER ON: "H")
IC1
CPU
μPD1704C-018
VDD
+5
Power
Q301
MI~M6, UP/DOWN, FM/AM SWITCHES ON
+11V
0
50ms
POWER OFF: APPROX. 22V WITHOUT LOAD
THIS OPERATES POWER ON/OFF.
Q13
+12V (CONTROLLED BY POWER SW)
POWER OFF: 22V
ON: 17V
IC1
DC POWER SUPPLY
-20V
Q14
+5V
(+5V IN GENERAL) NOT RELATED TO POWER SW
FOR FL FILAMANT BIAS
FL FILAMENT
FL (LIT DYNAMICALLY)
Q302
Q303
EVERY (TIMER)
SLEEP
FL DRIVER
IC2
AN6873
MEMO
STAND BY
D1~D6
D1~D6
Sa~Sg
-20V
KEY MATRIX
OPERATION KEY MATRIX
SW1~SW15
K0~K13
J2, IC5, 6
REMOTE

•GX-110


J17
MIX MIC
MIC AMP
IC12
M5218L
IC2 TC9152P
J1
PHONO
PHONO EQ
IC1
M5220L
J3
C.D.
J5
AUX
J7
REC. OUT
CD
AUX
PH
TAPE
POWER SW OF TUNER
0V (at ON)
8V (at OFF)
Q1, 2
(REC, MUTE ON at AUX)
FUNCTIONS
12.2V (at SELECTED)
0V (OTHERS)
J10
TUNER
TUNER INPUT (L-ch)
TUNER INPUT (R-ch)
MEMORY
FM/AM
UP/DOWN
at PUSH
-10V
0V
J11
REC/PLAY
TAPE INPUT (L-ch)
TAPE INPUT (R-ch)
REC OUTPUT (R-ch)
3.5V
0V
'H' LEVEL at REC, PLAY
at AUX REC 'H' LEVEL
PIN ①, ③, ④, ⑤, ⑥
1.8V
0V
at CD REC 'H' LEVEL
at PHONE REC 'H' LEVEL
at TUNER REC 'H' LEVEL
AUX
CD
PH
TUN
TAPE
IC3
M54563
TONE ARM
3.5V (at UP)
0V (at DOWN)
J12
CONTROL
J9
PLAYER SYNC
15V
(RECORD, TONE ARM DOWN: PIN SHORT-CIRCUITED)
15V
0
TONE ARM DOWN
'H' LEVEL (at REC)
Q4
Q6
15V
SW8
SW9
SW7
SW5
SW6
J13
REMOTE To TUNER
(INHIBITS FUNCTION SELECTION DUE TO PLAYER SYNC DURING RECORDING)
TUNER CONTROL SIGNAL
(LW)
(TUN-UP)
(TUN-DOWN)
(FM)
(MW)
J14
REMOTE To DECK
IC8 TC4049BP
(F.F)
(RWD)
(PAUSE)
(STOP)
(R-PLAY)
(PLAY)
DECK CONTROL SIGNAL
5V
Q59
Q25
4.8V
J15
PLAYER START/CUT
TRANSISTO
MS OPER
4.8V
0V
0.5ms
DECK SYNC SIGNAL
4.8V
0V
3S


MIC AMP IC12 M5218L
IC2 TC9152P
OUTPUT
MUTE
CD AUX PH TAPE TUN
IC13 M5218L GRAPHIC EQUALIZER IC13, Q41~54
-20dB MUTING Q9,10
IC4 M51133P VOLUME CONTROL IC4
VOLUME BALANCE CONTROL
-15V +15V
IC5 M5218L DSL/PRE IC5, Q11~14
DSL 0V (at OFF) AC SIGNAL (at ON)
DSL·AGC D21,23
Q13 DSL. ON/OFF
SW3 DSL. OFF ON
D60
0V 0.7V(at MUTE)
Q15
PRE OUTPUT (L-ch)
PRE OUTPUT (R-ch)
J16 OUTPUT
E MODEL ONLY
E MODEL AC 220V, 50/60HZ
U MODEL AC 120V, 60HZ
K,G MODELS AC 240V, 50/60HZ
J18
SW4 REC OUTPUT GRAPHIC EQUALIZER ON/OFF
Q1,2 (REC, MUTE (ON at AUX))
FUNCTIONS 12.2V (at SELECTED) 0V (OTHERS)
MEMORY FM/AM UP/DOWN at PUSH -10V 0V
IC11 BA684A VOLUME INDICATOR UNIT IC11 D70~77
15V
MUTE Q17,18
Q17,18: OFF MUTE :ON MUTE
POWER ON/OFF Q20
Q24 VOLTAGE CONST. Q23
D37 D38
Q62 4.8V
POWER 5V (at ON) 0V (at OFF)
15V -15V
VOLTAGE CONST. Q19~22
D34 T1(P.T) SW12
"H" MODEL AC120V/220V/240V 50/60HZ
J15
0V(at MIN) 4.7V(at MAX)
D62
Q17+Q18+Q20
MUTE OFF MUTE ON
POWER ON OFF ON OFF
Q 17 "H" "L"
Q 20 "H" "L"
Q 18 "H" "L"
Q7 11V 0V (at REC) (INHIBITS FUNCTION SELECTION DURING REC)
+B
'H' LEVEL, 11.5V 'L' LEVEL, 0V (at REC)
Q5
'L' LEVEL, 0V 'H' LEVEL, 0.7V (at REC)
Q3 TU.FUNCTION GENERATOR (SET TO ON WITH TUNER BUTTON PRESSED)
-10V 0V
AUX CD PH TUN TAPE
IC3 M54563
3.5V 0V
"H" LEVEL at REC, PLAY
at AUX REC 'H' LEVEL
SW8 SW9 SW7 SW5 SW6
IC7 TC4049BP
FUNCTION SELECT SIGNAL
IC9 TC4049BP
(CD) (AUX) (PHONO) (TAPE) (TUN-REC)
Q4 Q6
ARM
TUNER CONTROL SIGNAL
(LW) (TUN-UP) (TUN-DOWN) (FM) (MW)
ON NORMALLY ON → OFF WITH RECORD
PLAYED 15V
ARM DOWN 0V
4.8V
IC8 TC4049BP
DECK CONTROL SIGNAL
(F.F) (RWD) (PAUSE) (STOP) (R-PLAY) (PLAY)
Q59 Q60 Q61 Q25
5V
TRANSISTOR FOR MS OPERATION
DECK SYNC SIGNAL
4.8V 0V 3S
Q55 INHIBITS FUNCTION SELECTION DURING RECORDING
Q56
IC6 TC9134P
CD AUX PHONO TAPE TUN-REC LW TUN-UP TUN-DOWN FM MW F.F RWD PAUSE STOP R·PLAY PLAY POWER START/CUT
MUT D/A OUT RX IN MUT SW VR UP VR DOWN
IC10 Q57 Q58
PHOTO TR AMP. UNIT
RECEIVER UNIT EUR-3629
D78 COMMANDER 12V
SW2 MUTE
SW11 VOLUME UP
SW10 VOLUME DOWN

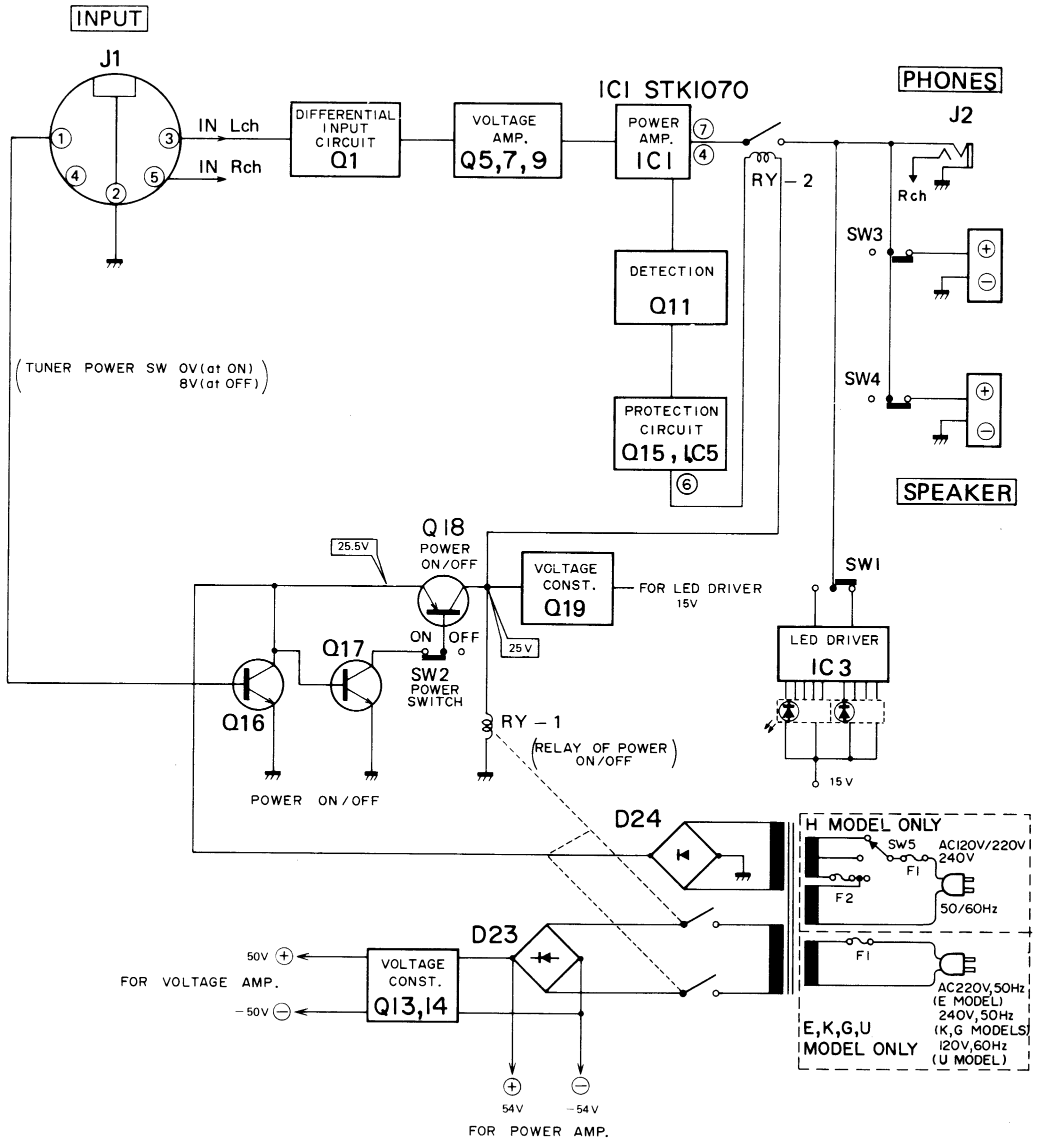
The output from Q17 is instantaneously set to the LOW level or HIGH level by synchronizing with the power ON/OFF signal output from the power switch and the tuner. Q20 is set to the LOW or HIGH level following this. Q18 is kept at the LOW level in general, and it is set to the HIGH level for several seconds only when the primary power supply is set to OFF.

VR limiter circuit.

IC6 in GX-110 operates during power OFF and the UP/DOWN operation of the VR can be remote-controlled. As a result, so it is designed so that the VR does not rise above a certain position during power OFF.

1. When the VR is raised by remote control during power OFF, the voltage at pin 15 is increased → VR is raised → IC10 is set ON, IC6 pin 14 is set to "LOW" level and the VR is lowered. (Q58 is set to OFF at this time).
2. Q58 is set to ON during power ON, so IC10 is not set to ON with the VR raised.

•BX-110

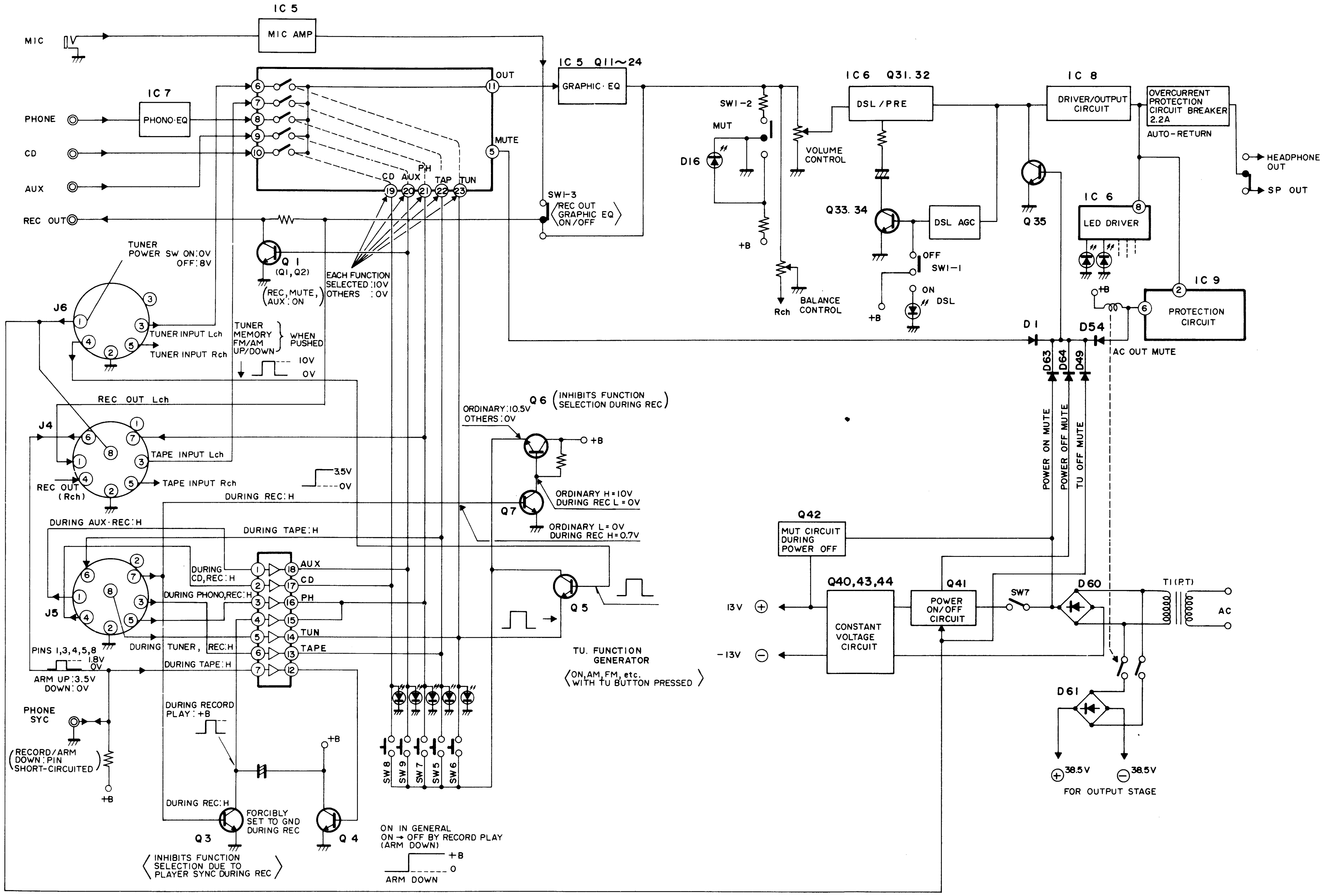

INPUT
J1
IN Lch
IN Rch
DIFFERENTIAL INPUT CIRCUIT Q1
VOLTAGE AMP. Q5,7,9
IC1 STK1070
POWER AMP. IC1
RY-2
PHONES
J2
Rch
SW3
SW4
SPEAKER
DETECTION Q11
PROTECTION CIRCUIT Q15, IC5
(TUNER POWER SW 0V(at ON) 8V(at OFF))
Q18 POWER ON/OFF
25.5V
VOLTAGE CONST. Q19
FOR LED DRIVER 15V
25V
SW1
LED DRIVER IC3
15V
Q16
Q17
SW2 POWER SWITCH
ON OFF
POWER ON/OFF
RY-1
(RELAY OF POWER ON/OFF)
D24
H MODEL ONLY
SW5 AC120V/220V 240V
F1 F2
50/60Hz
D23
50V
-50V
FOR VOLTAGE AMP.
VOLTAGE CONST. Q13,14
54V -54V
FOR POWER AMP.
AC220V, 50Hz (E MODEL) 240V, 50Hz (K,G MODELS) 120V, 60Hz (U MODEL)
E,K,G,U MODEL ONLY

NOTES (1) Earth pattern

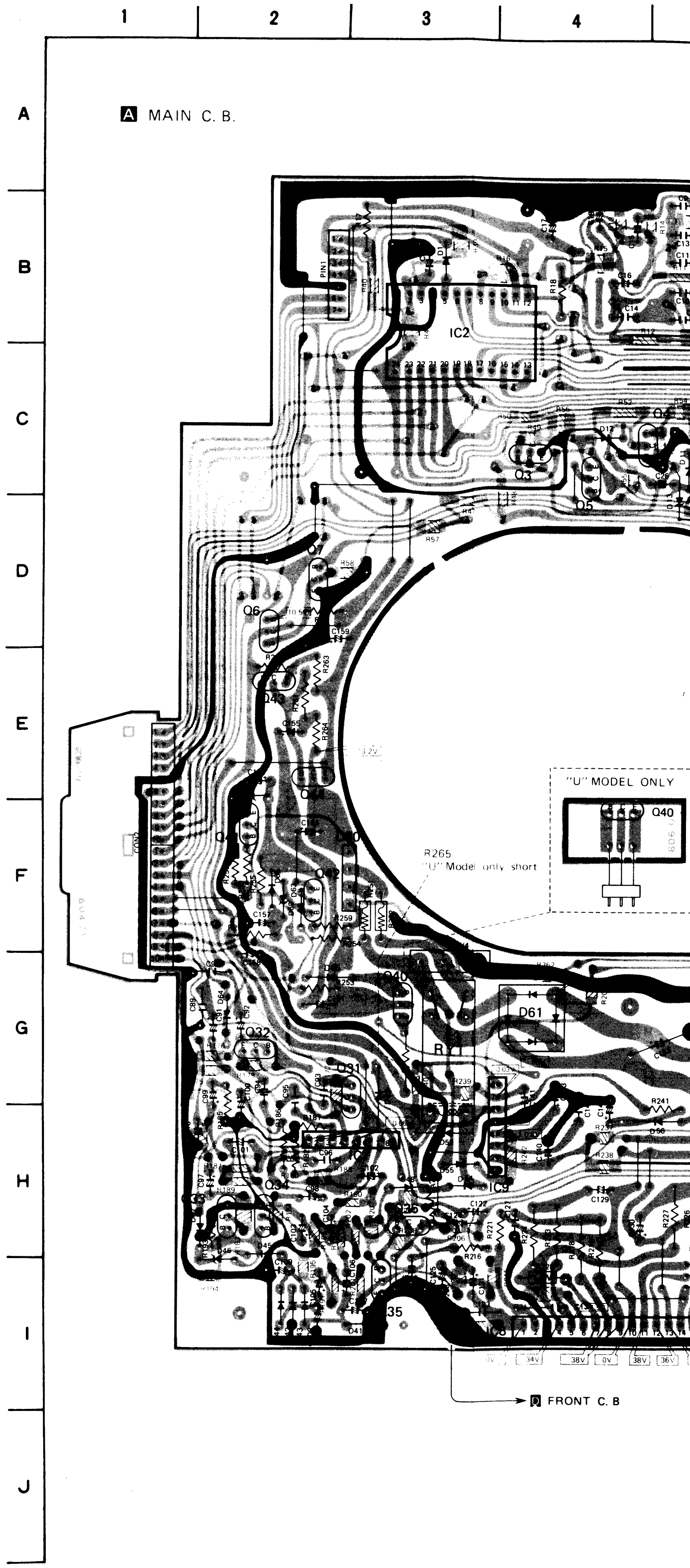
(2) The voltage is the refere

But ( ) is with AM re

•MX-90

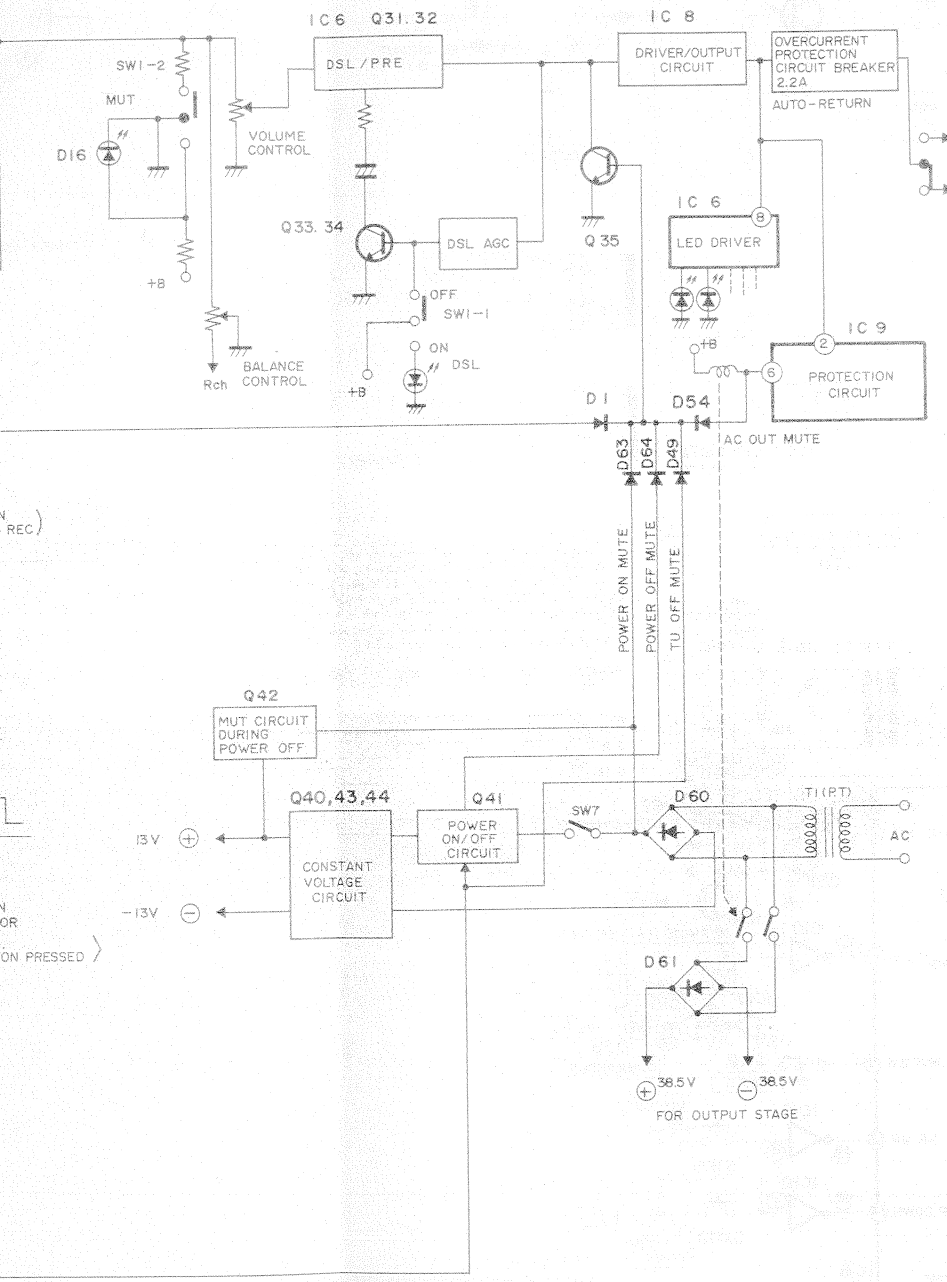

IC 5
MIC AMP
MIC
IC 7
PHONO·EQ
PHONE
CD
AUX
REC OUT
OUT
MUTE
IC 5 Q11～24
GRAPHIC · EQ
CD AUX PH TAP TUN
SW1-3
REC OUT GRAPHIC EQ ON/OFF
SW1-2
MUT
D16
+B
VOLUME CONTROL
Rch
BALANCE CONTROL
IC 6 Q31. 32
DSL / PRE
Q33. 34
DSL AGC
OFF
SW1-1
ON
DSL
IC 8
DRIVER/OUTPUT CIRCUIT
Q 35
OVERCURRENT PROTECTION CIRCUIT BREAKER 2.2A
AUTO-RETURN
HEADPHONE OUT
SP OUT
IC 6
LED DRIVER
IC 9
PROTECTION CIRCUIT
D 1
D54
AC OUT MUTE
D63 D64 D49
POWER ON MUTE
POWER OFF MUTE
TU OFF MUTE
TUNER POWER SW ON: 0V OFF: 8V
Q 1 (Q1, Q2)
(REC, MUTE, AUX: ON)
EACH FUNCTION SELECTED: 10V OTHERS : 0V
J6
TUNER INPUT Lch
TUNER INPUT Rch
TUNER MEMORY FM/AM UP/DOWN
WHEN PUSHED
10V
0V
REC OUT Lch
J4
TAPE INPUT Lch
TAPE INPUT Rch
REC OUT (Rch)
3.5V
0V
DURING REC: H
DURING AUX·REC: H
DURING TAPE: H
J5
DURING CD, REC: H
DURING PHONO, REC: H
DURING TUNER, REC: H
DURING TAPE: H
AUX
CD
PH
TUN
TAPE
PINS 1,3,4,5,8
1.8V
0V
ARM UP: 3.5V DOWN: 0V
PHONE SYC
(RECORD/ARM DOWN: PIN SHORT-CIRCUITED)
+B
DURING RECORD PLAY: +B
DURING REC: H
Q 3
FORCIBLY SET TO GND DURING REC
Q 4
(INHIBITS FUNCTION SELECTION DUE TO PLAYER SYNC DURING REC)
ON IN GENERAL
ON → OFF BY RECORD PLAY (ARM DOWN)
ARM DOWN
SW8 SW9 SW7 SW5 SW6
Q 6 (INHIBITS FUNCTION SELECTION DURING REC)
ORDINARY: 10.5V OTHERS: 0V
Q 7
ORDINARY H = 10V DURING REC L = 0V
ORDINARY L = 0V DURING REC H = 0.7V
Q 5
TU. FUNCTION GENERATOR
(ON, AM, FM, etc. WITH TU BUTTON PRESSED)
Q42
MUT CIRCUIT DURING POWER OFF
Q40,43,44
CONSTANT VOLTAGE CIRCUIT
13V
-13V
Q41
POWER ON/OFF CIRCUIT
SW7
D 60
T1 (P.T)
AC
D 61
38.5V
38.5V
FOR OUTPUT STAGE

WIRING (MX-90)

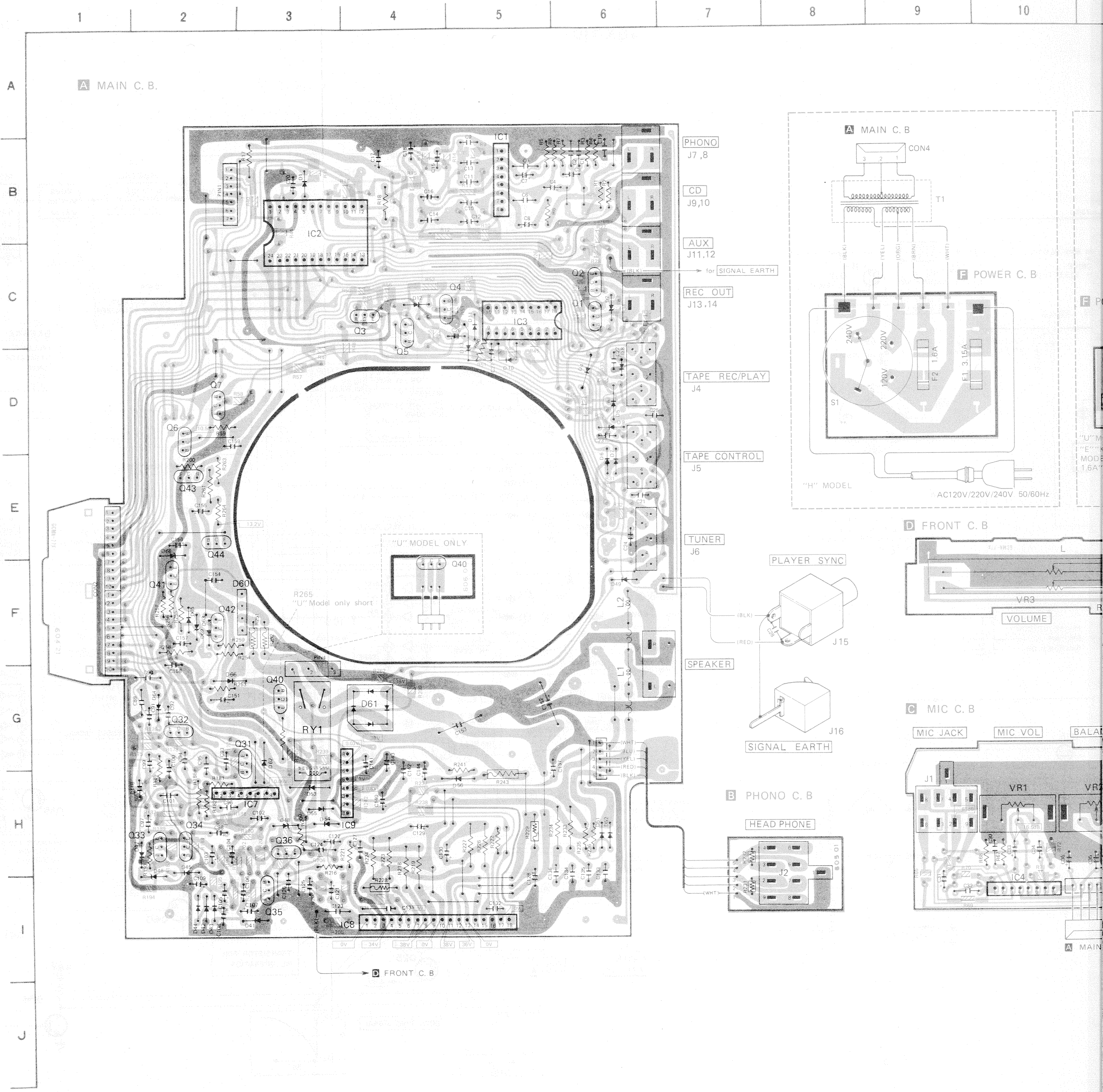

1
2
3
4
A
B
C
D
E
F
G
H
I
J
A MAIN C. B.
IC2
Q3
Q5
Q6
"U" MODEL ONLY
Q40
R265
"U" Model only short
D61
Q32
Q31
Q34
IC9
35
B FRONT C. B

NOTES (1) ▨ Earth pattern ▨ Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. But ( ) is with AM reception.


SW1-2
MUT
D16
VOLUME CONTROL
IC6 Q31,32
DSL/PRE
Q33,34
DSL AGC
+8
OFF
SW1-1
ON
DSL
Rch
BALANCE CONTROL
+B
IC8
DRIVER/OUTPUT CIRCUIT
Q35
OVERCURRENT PROTECTION CIRCUIT BREAKER 2.2A
AUTO-RETURN
HEADPHONE OUT
SP OUT
IC6
LED DRIVER
IC9
PROTECTION CIRCUIT
D1
D54
AC OUT MUTE
D63
D64
D49
POWER ON MUTE
POWER OFF MUTE
TU OFF MUTE
REC)
Q42
MUT CIRCUIT DURING POWER OFF
Q40,43,44
CONSTANT VOLTAGE CIRCUIT
Q41
POWER ON/OFF CIRCUIT
SW7
D60
T1(PT)
AC
13V
-13V
D61
ON PRESSED〉
38.5V
38.5V
FOR OUTPUT STAGE

WIRING (MX-90)

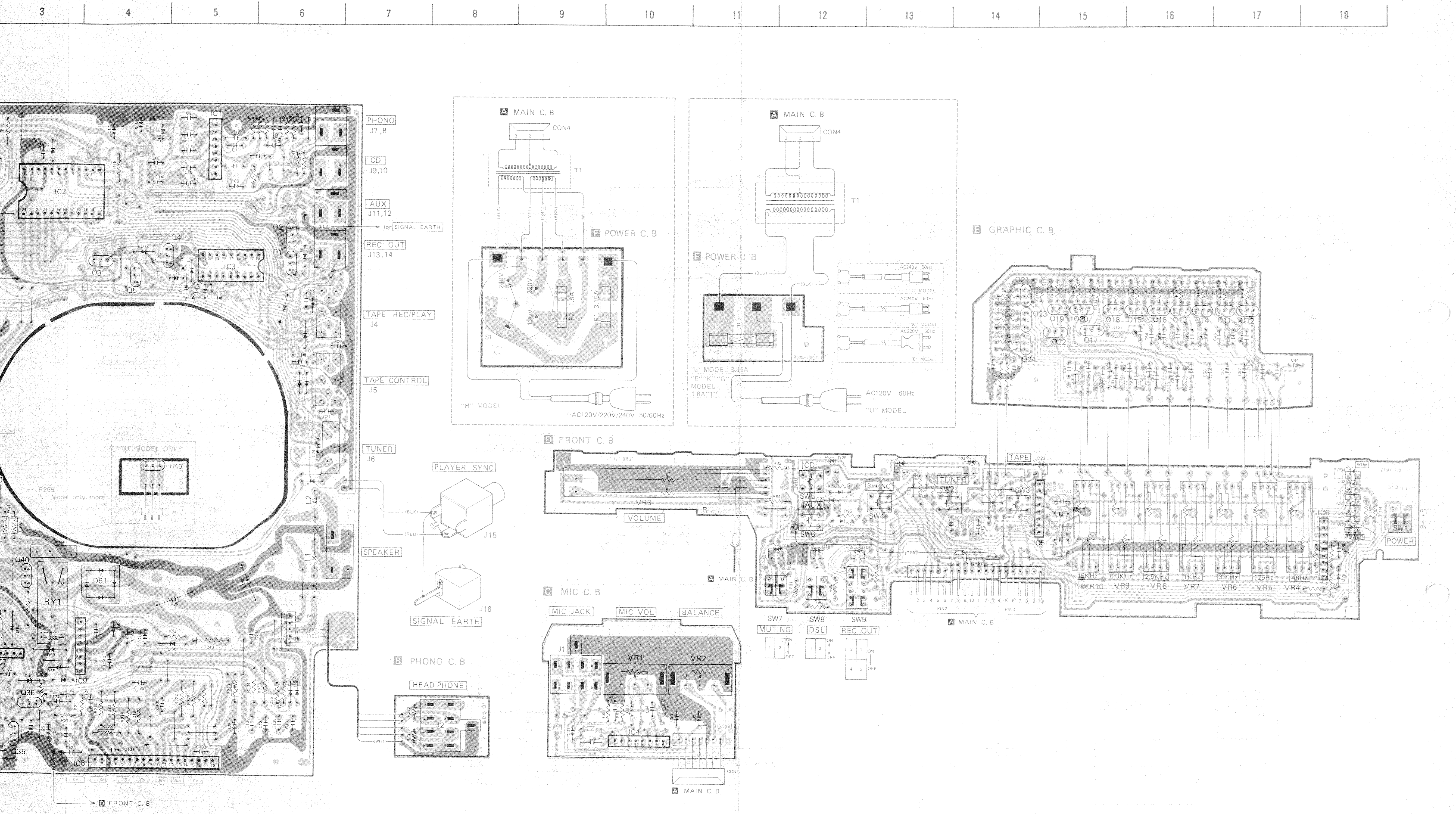

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
A MAIN C.B.
IC1
IC2
IC3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
PHONO
J7,8
CD
J9,10
AUX
J11,12
for SIGNAL EARTH
REC OUT
J13,14
TAPE REC/PLAY
J4
TAPE CONTROL
J5
TUNER
J6
Q43
Q44
Q41
Q42
D60
"U" MODEL ONLY
Q40
R265
"U" Model only short
L2
L1
SPEAKER
Q40
D61
RY1
Q32
Q31
IC7
IC9
Q33
Q34
Q36
Q35
IC8
D FRONT C.B.
PLAYER SYNC
(BLK)
(RED)
J15
J16
SIGNAL EARTH
A MAIN C.B
CON4
T1
(BLK)
(YEL)
(ORG)
(BRN)
(WHT)
F POWER C.B
240V
220V
120V
F2 1.6A
F1 3.15A
S1
"H" MODEL
AC120V/220V/240V 50/60Hz
D FRONT C.B
VR3
VOLUME
B PHONO C.B
HEAD PHONE
J2
C MIC C.B
MIC JACK
MIC VOL
J1
VR1
IC4
A MAIN

NOTES (1) ▨ Earth pattern ▨ Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.

MX-90 H,HB,UB,E EB,K,KB,G MX-90 H,HB,UB,E EB,K,KB,G

AIWA®

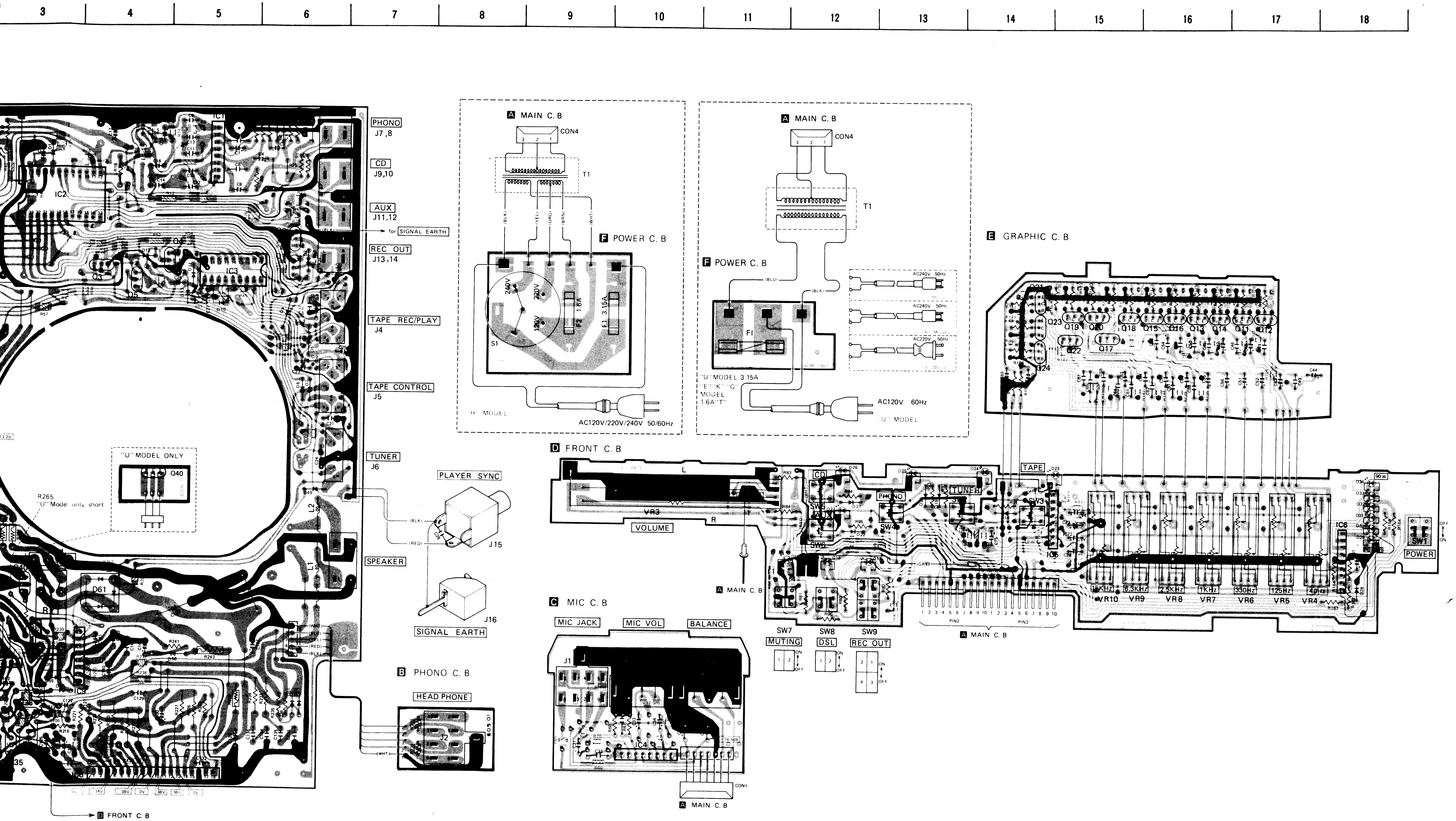

3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
IC1
IC2
IC3
Q1
Q2
Q3
Q4
Q5
PHONO
J7,8
CD
J9,10
AUX
J11,12
for SIGNAL EARTH
REC OUT
J13,14
TAPE REC/PLAY
J4
TAPE CONTROL
J5
TUNER
J6
SPEAKER
"U" MODEL ONLY
Q40
R265
"U" Model only short
Q40
D61
RY1
IC8
IC9
Q35
Q36
L1
L2
D FRONT C.B
A MAIN C.B
CON4
T1
(BLK)
(YEL)
(ORG)
(BRN)
(WHT)
F POWER C.B
240V
220V
120V
F2 1.6A
F1 3.15A
S1
"H" MODEL
AC120V/220V/240V 50/60Hz
A MAIN C.B
CON4
T1
F POWER C.B
(BLU)
(BLK)
F1
AC240V 50Hz
"G" MODEL
AC240V 50Hz
"K" MODEL
AC220V 50Hz
"E" MODEL
"U" MODEL 3.15A
"E""K""G"
MODEL
1.6A"T"
AC120V 60Hz
"U" MODEL
E GRAPHIC C.B
Q21
Q23
Q19
Q20
Q18
Q15
Q16
Q13
Q14
Q11
Q12
Q22
Q17
Q24
D FRONT C.B
L
R
VR3
VOLUME
CD
PHONO
TUNER
TAPE
AUX
SW2
SW3
SW4
SW5
SW6
IC5
IC6
POWER
SW1
15KHz
6.3KHz
2.5KHz
1KHz
330Hz
125Hz
40Hz
VR10
VR9
VR8
VR7
VR6
VR5
VR4
PLAYER SYNC
J15
(BLK)
(RED)
J16
SIGNAL EARTH
A MAIN C.B
SW7
MUTING
SW8
DSL
SW9
REC OUT
ON
OFF
PIN2
PIN3
A MAIN C.B
C MIC C.B
MIC JACK
MIC VOL
BALANCE
J1
VR1
VR2
IC4
CON1
A MAIN C.B
B PHONO C.B
HEAD PHONE
J2
(WHT)

NOTES (1) ■ Earth pattern ▨ Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. But ( ) is with AM reception.

MX-90 H,HB,UB,E EB,K,KB,G MX-90 H,HB,UB,E EB,K,KB,G

AIWA®

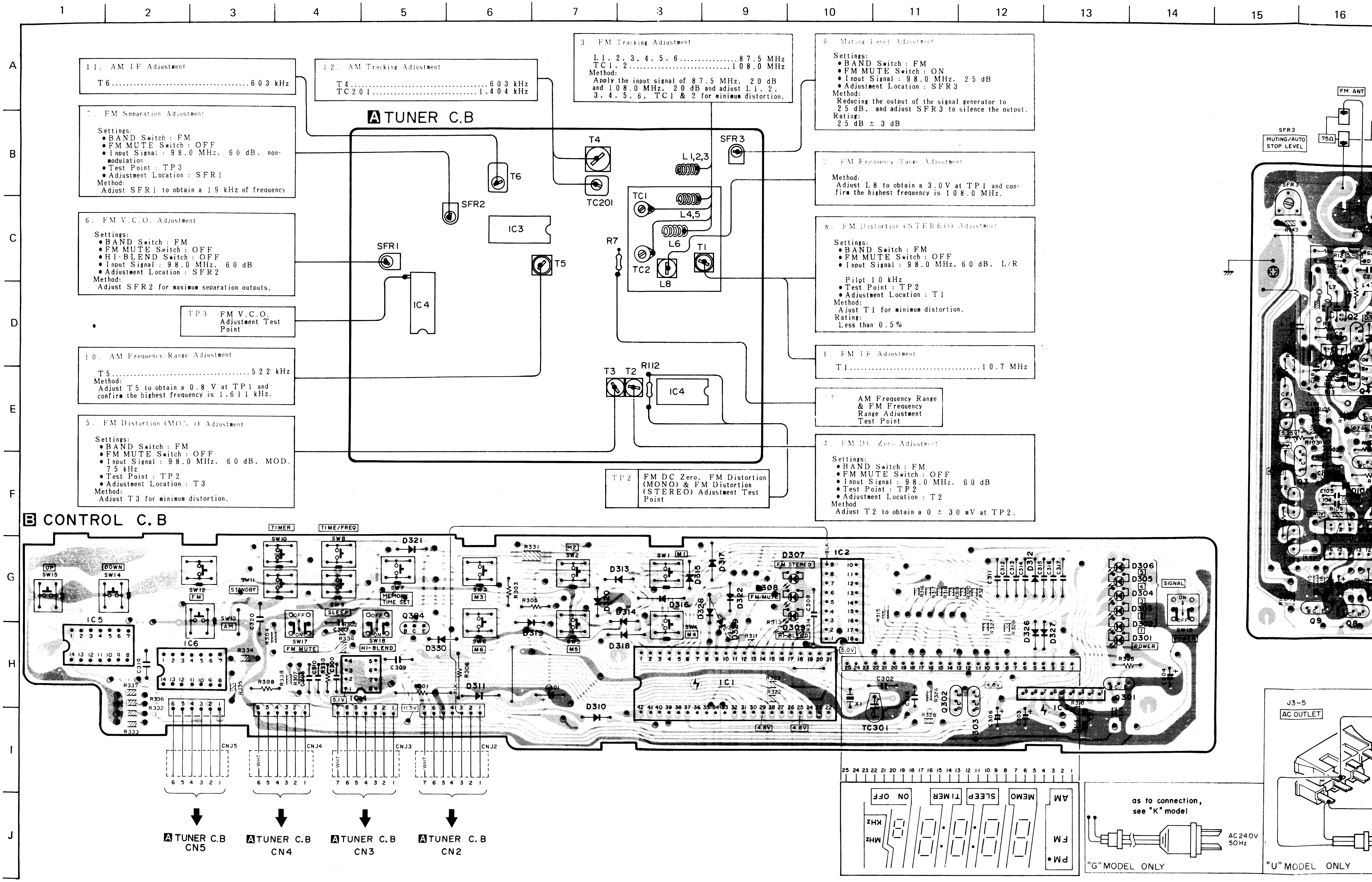

3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
IC1
IC2
IC3
Q3
Q5
R57
R18
PHONO
J7,8
CD
J9,10
AUX
J11,12
for SIGNAL EARTH
REC OUT
J13,14
TAPE REC/PLAY
J4
TAPE CONTROL
J5
TUNER
J6
"U" MODEL ONLY
Q40
R265
"U" Model only short
SPEAKER
L1
L2
D49
D61
R239
R241
R243
R216
R221
R227
R235
C129
C134
C135
IC9
(WHT)
(BLU)
(RED)
(BLK)
D FRONT C.B
PLAYER SYNC
J15
(BLK)
(RED)
J16
SIGNAL EARTH
B PHONO C.B
HEAD PHONE
J2
(WHT)
A MAIN C.B
CON4
T1
(BLK)
(YEL)
(ORG)
(BRN)
(WHT)
F POWER C.B
240V
220V
120V
S1
F2 1.6A
F1 3.15A
"H" MODEL
AC120V/220V/240V 50/60Hz
A MAIN C.B
CON4
T1
F POWER C.B
(BLU)
(BLK)
FI
"U" MODEL 3.15A
"E" "K" "G" MODEL 1.6A "T"
AC240V 50Hz
AC240V 50Hz
AC220V 50Hz
AC120V 60Hz
"U" MODEL
E GRAPHIC C.B
Q21
Q23
Q19
Q20
Q18
Q15
Q16
Q13
Q14
Q11
Q12
Q22
Q17
Q24
C44
D FRONT C.B
L
VR3
R
VOLUME
A MAIN C.B
CD
R83
D26
D25
D24
D23
TAPE
PHONO
TUNER
AUX
SW5
SW4
SW3
SW6
R84
R95
D21
D22
(GRY)
IC5
IC6
90W
SW1
POWER
OFF
ON
R164
R163
D28
15KHz
6.3KHz
2.5KHz
1KHz
330Hz
125Hz
40Hz
VR10
VR9
VR8
VR7
VR6
VR5
VR4
PIN2
PIN3
A MAIN C.B
SW7
MUTING
SW8
DSL
SW9
REC OUT
ON
OFF
C MIC C.B
MIC JACK
MIC VOL
BALANCE
J1
IC4
CON1
A MAIN C.B

NOTES (1) ▩ Earth pattern ▨ Printed resistor pattern Component side pattern ▧ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. But ( ) is with AM reception.

The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (ϟ).

WIRING (TX-110 H, U, G)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A TUNER C.B
T4
T6
SFR2
SFR1
IC3
IC4
T5
L1,2,3
SFR3
TC201
TC1
L4,5
L6
TC2
L8
T1
R7
T3
T2
R112
B CONTROL C.B
UP
SW15
DOWN
SW14
IC5
IC6
SW12
FM
SW13
AM
STANDBY
SW11
TIMER
SW10
TIME/FREQ
SW8
SW9
SLEEP
SW17
FM MUTE
SW18
HI-BLEND
SW7
MEMORY TIME SET
Q304
D321
D330
SW3
M3
SW6
M6
R331
M2
SW2
SW5
M5
D313
D314
D319
D318
D310
D311
SW1
M1
SW4
M4
D316
D315
D317
D328
D322
D307
FM STEREO
D308
FM-MUTE
D309
HI-BLEND
IC2
IC1
5.0V
4.8V
X1
TC301
Q302
Q303
Q301
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
SW16
BLK
WHT
5.1V
11.5V
4.6V
CNJ5
CNJ4
CNJ3
CNJ2
A TUNER C.B CN5
A TUNER C.B CN4
A TUNER C.B CN3
A TUNER C.B CN2
AM
MEMO
SLEEP
TIMER
ON OFF
FM
PM
MHz
KHz
as to connection, see "K" model
AC 240V 50Hz
"G" MODEL ONLY
J3~5
AC OUTLET
"U" MODEL ONLY
FM ANT
SFR3
MUTING/AUTO STOP LEVEL
75Ω

11. AM IF Adjustment

T6 .... 603 kHz

7. FM Separation Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, non-modulation
- Test Point : TP3
- Adjustment Location : SFR1

Method:
Adjust SFR1 to obtain a 19 kHz of frequency

6. FM V.C.O. Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- HI-BLEND Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Adjustment Location : SFR2

Method:
Adjust SFR2 for maximum separation outputs.

TP3 FM V.C.O. Adjustment Test Point

10. AM Frequency Range Adjustment

T5 .... 522 kHz

Method:
Adjust T5 to obtain a 0.8 V at TP1 and confirm the highest frequency is 1,611 kHz.

5. FM Distortion (MONO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, MOD. 75 kHz
- Test Point : TP2
- Adjustment Location : T3

Method:
Adjust T3 for minimum distortion.

12. AM Tracking Adjustment

T4 .... 603 kHz
TC201 .... 1,404 kHz

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6 .... 87.5 MHz
TC1, 2 .... 108.0 MHz

Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

TP2 FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.

Rating:
25 dB ± 3 dB

2. FM Frequency Range Adjustment

Method:
Adjust L8 to obtain a 3.0V at TP1 and confirm the highest frequency is 108.0 MHz.

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R

  Pilot 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.

Rating:
Less than 0.5%

1. FM IF Adjustment

T1 .... 10.7 MHz

TP1 AM Frequency Range & FM Frequency Range Adjustment Test Point

4. FM DC Zero Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

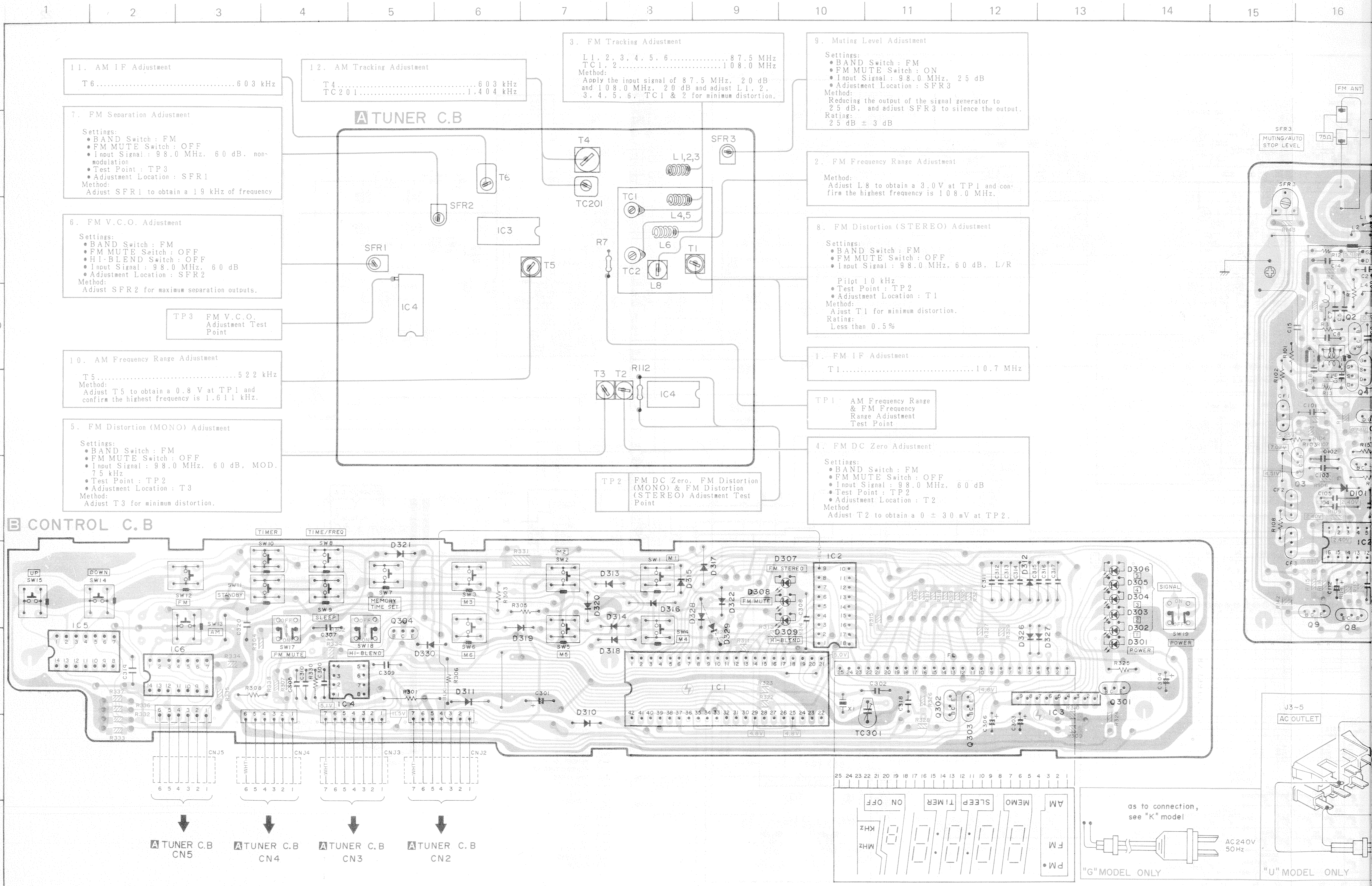
Method
Adjust T2 to obtain a 0 ± 30 mV at TP2.

WIRING (TX-110 H, U, G)

NOTES (1) ▨ Earth pattern ▨ Printed resistor pattern Component side pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But ( ) is with AM reception.

The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (⚡).


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A TUNER C.B
T4
T6
TC201
SFR3
L1,2,3
TC1
L4,5
L6
T1
TC2
L8
R7
SFR2
SFR1
IC3
T5
IC4
T3
T2
R112
IC4
B CONTROL C.B
TIMER
TIME/FREQ
SW10
SW8
D321
UP
SW15
DOWN
SW14
SW12
FM
SW11
STANDBY
SW13
AM
IC5
IC6
SW9
SLEEP
SW7
MEMORY TIME SET
SW17
FM MUTE
SW18
HI-BLEND
Q304
D330
SW3
M3
SW6
M6
M2
SW2
SW1
M1
SW5
M5
SW4
M4
D313
D314
D318
D319
D320
D315
D316
D317
D322
D328
D329
D307
FM STEREO
D308
FM MUTE
D309
HI-BLEND
IC2
IC1
IC3
D311
D310
TC301
Q301
Q302
Q303
D326
D327
D312
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
SW19
POWER
CN5
CN4
CN3
CN2
A TUNER C.B CN5
A TUNER C.B CN4
A TUNER C.B CN3
A TUNER C.B CN2
ON OFF
TIMER
SLEEP
MEMO
AM
FM
PM
MHz
KHz
FM ANT
SFR3
MUTING/AUTO STOP LEVEL
75Ω
Q1
Q2
Q3
Q4
Q8
Q9
D101
J3~5
AC OUTLET
as to connection, see "K" model
AC 240V 50Hz
"G" MODEL ONLY
"U" MODEL ONLY

11. AM IF Adjustment

T6..603 kHz

7. FM Separation Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, non-modulation
- Test Point : TP3
- Adjustment Location : SFR1

Method:
Adjust SFR1 to obtain a 19 kHz of frequency

6. FM V.C.O. Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- HI-BLEND Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Adjustment Location : SFR2

Method:
Adjust SFR2 for maximum separation outputs.

TP3 FM V.C.O. Adjustment Test Point

10. AM Frequency Range Adjustment

T5..522 kHz

Method:
Adjust T5 to obtain a 0.8 V at TP1 and confirm the highest frequency is 1,611 kHz.

5. FM Distortion (MONO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, MOD. 75 kHz
- Test Point : TP2
- Adjustment Location : T3

Method:
Adjust T3 for minimum distortion.

12. AM Tracking Adjustment

T4..603 kHz
TC201...................................1,404 kHz

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6...............87.5 MHz
TC1, 2............................108.0 MHz

Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

TP2 FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.

Rating:
25 dB ± 3 dB

2. FM Frequency Range Adjustment

Method:
Adjust L8 to obtain a 3.0V at TP1 and confirm the highest frequency is 108.0 MHz.

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R

  Pilot 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.

Rating:
Less than 0.5%

1. FM IF Adjustment

T1..10.7 MHz

TP1 AM Frequency Range & FM Frequency Range Adjustment Test Point

4. FM DC Zero Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

Method
Adjust T2 to obtain a 0 ± 30 mV at TP2.

resistor pattern Component side pattern ▨ Others pattern
measured with a tester (20 K ohms/V DC) when there are no signals.

The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (⚡).

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6................87.5 MHz
TC1, 2..............................108.0 MHz

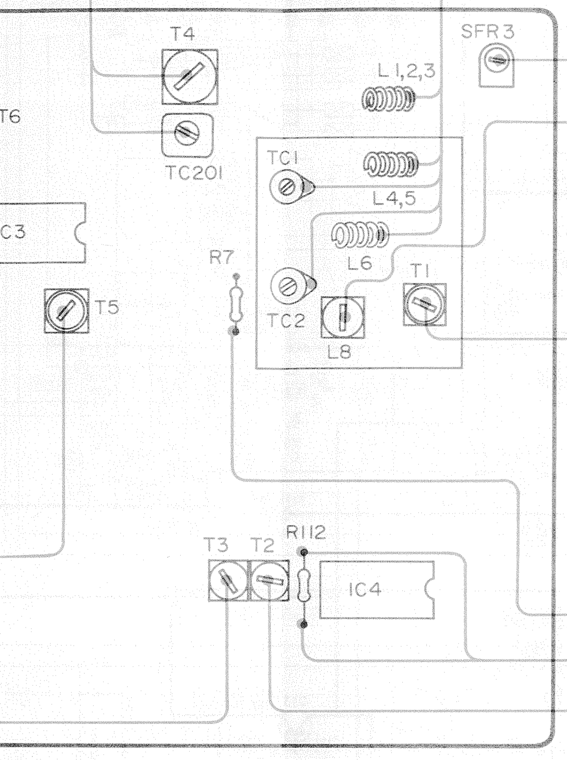
Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.

Rating:
25 dB ± 3 dB


T4
SFR3
L1,2,3
T6
TC201
TC1
L4,5
C3
L6
R7
T5
TC2
L8
T1
T3
T2
R112
IC4

2. FM Frequency Range Adjustment

Method:
Adjust L8 to obtain a 3.0V at TP1 and confirm the highest frequency is 108.0 MHz.

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R Pilpt 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.

Rating:
Less than 0.5%

1. FM IF Adjustment

T1......................................10.7 MHz

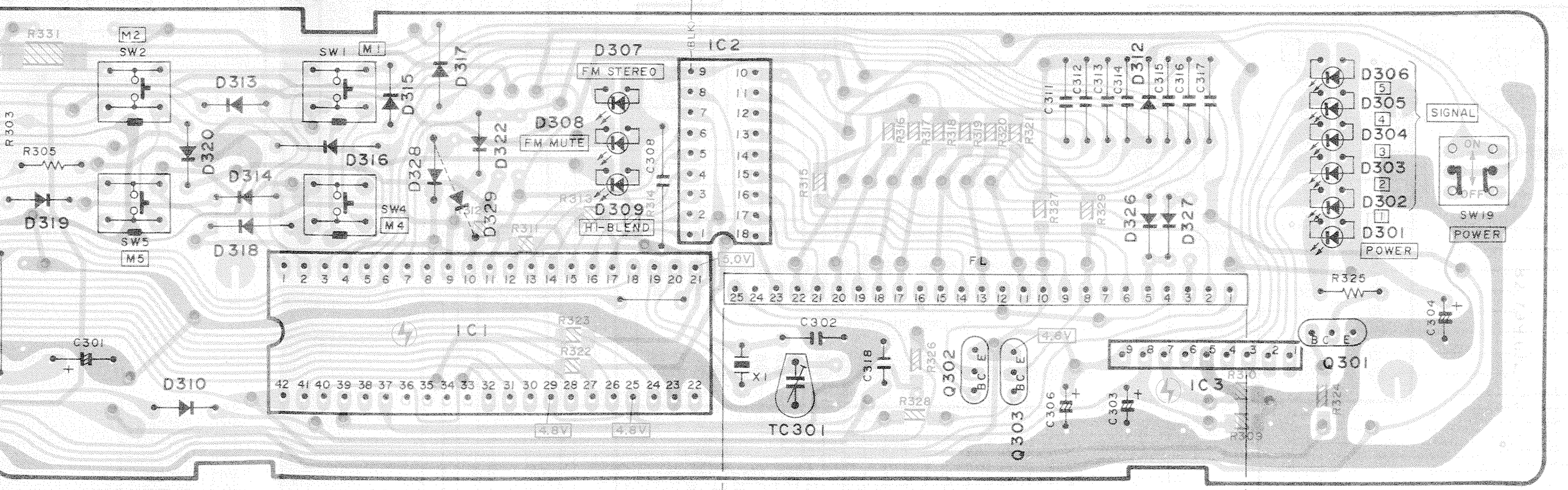
TP1	AM Frequency Range & FM Frequency Range Adjustment Test Point

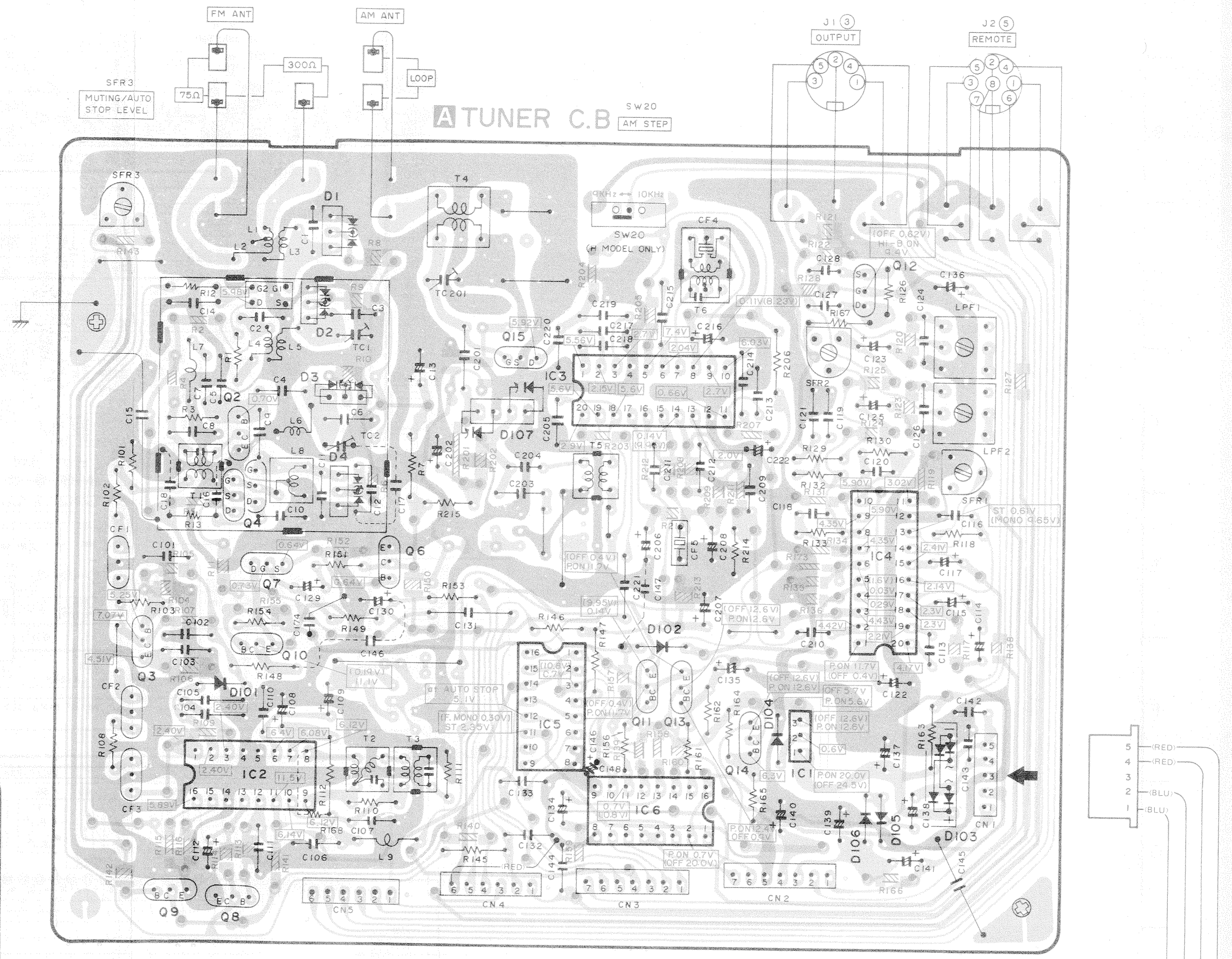
4. FM DC Zero Adjustment

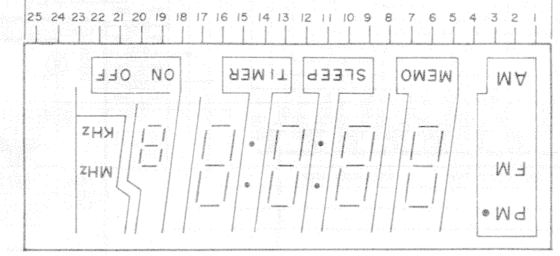
Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

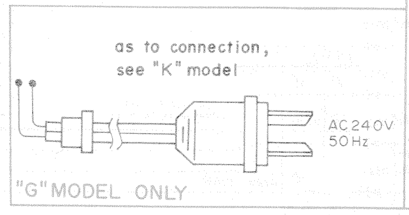
Method
Adjust T2 to obtain a 0 ± 30 mV at TP2.

TP2	FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

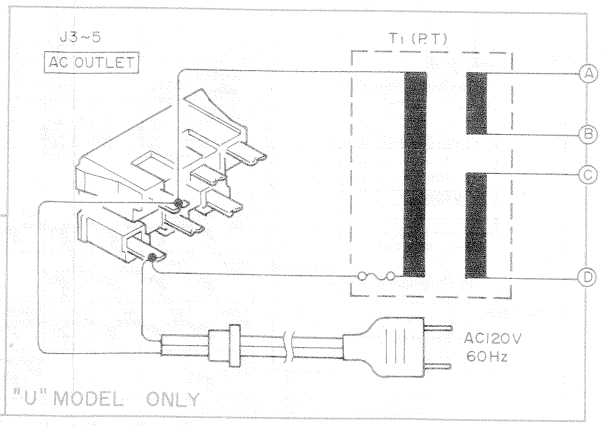

SW1
SW2
SW4
SW5
D307
FM STEREO
D308
FM MUTE
D309
H-BLEND
IC2
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
SW19
POWER
IC1
FL
IC3
Q301
Q302
Q303
TC301
D310
D313
D314
D315
D316
D317
D318
D319
D320


SFR3
MUTING/AUTO STOP LEVEL
FM ANT
75Ω
300Ω
AM ANT
LOOP
A TUNER C.B
SW20
AM STEP
J1 ③
OUTPUT
J2 ⑤
REMOTE
9KHz ↔ 10KHz
SW20
(H MODEL ONLY)
IC1
IC2
IC3
IC4
IC5
IC6
CN1
CN2
CN3
CN4
CN5
RED
BLU

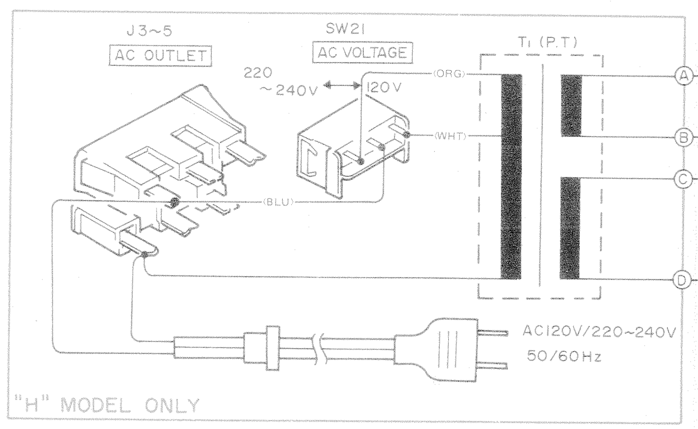

25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
AM
MEMO
SLEEP
TIMER
ON OFF
FM
PM
MHz
KHz


as to connection,
see "K" model
AC240V
50Hz

"G" MODEL ONLY


J3~5
AC OUTLET
T1 (P.T)
Ⓐ
Ⓑ
Ⓒ
Ⓓ
AC120V
60Hz

"U" MODEL ONLY


J3~5
AC OUTLET
SW21
AC VOLTAGE
220 ~240V
120V
(ORG)
(WHT)
(BLU)
T1 (P.T)
Ⓐ
Ⓑ
Ⓒ
Ⓓ
AC120V/220~240V
50/60Hz

"H" MODEL ONLY

resistor pattern Component side pattern ▨ Others pattern
easured with a tester (20 K ohms/V DC) when there are no signals.

The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (ϟ).

3. FM Tracking Adjustment

L1, 2, 3, 4, 5, 6................87.5 MHz
TC1, 2...........................108.0 MHz

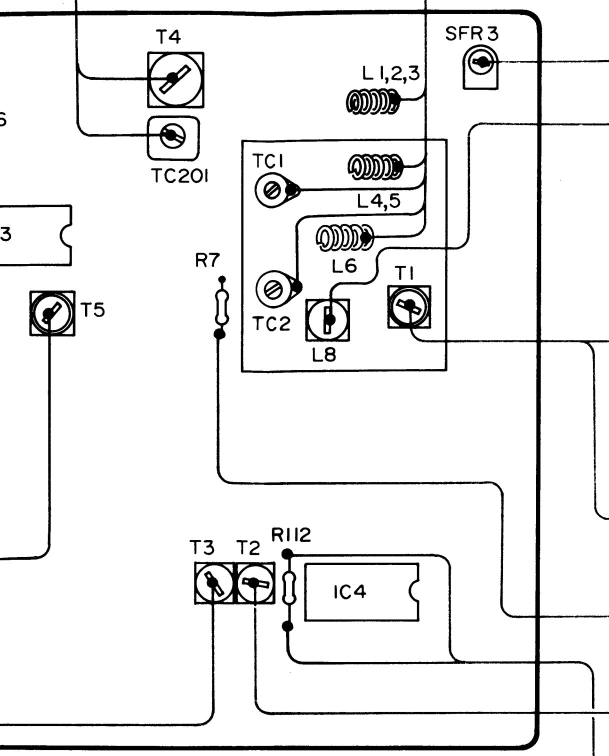
Method:
Apply the input signal of 87.5 MHz, 20 dB and 108.0 MHz, 20 dB and adjust L1, 2, 3, 4, 5, 6, TC1 & 2 for minimum distortion.

9. Muting Level Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : ON
- Input Signal : 98.0 MHz, 25 dB
- Adjustment Location : SFR3

Method:
Reducing the output of the signal generator to 25 dB, and adjust SFR3 to silence the output.

Rating:
25 dB ± 3 dB


T4
TC201
L1,2,3
SFR3
TC1
L4,5
L6
T1
TC2
L8
R7
T5
T3
T2
R112
IC4

2. FM Frequency Range Adjustment

Method:
Adjust L8 to obtain a 3.0V at TP1 and confirm the highest frequency is 108.0 MHz.

8. FM Distortion (STEREO) Adjustment

Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB, L/R

  Pilot 10 kHz
- Test Point : TP2
- Adjustment Location : T1

Method:
Ajust T1 for minimum distortion.

Rating:
Less than 0.5%

1. FM IF Adjustment

T1....................................10.7 MHz

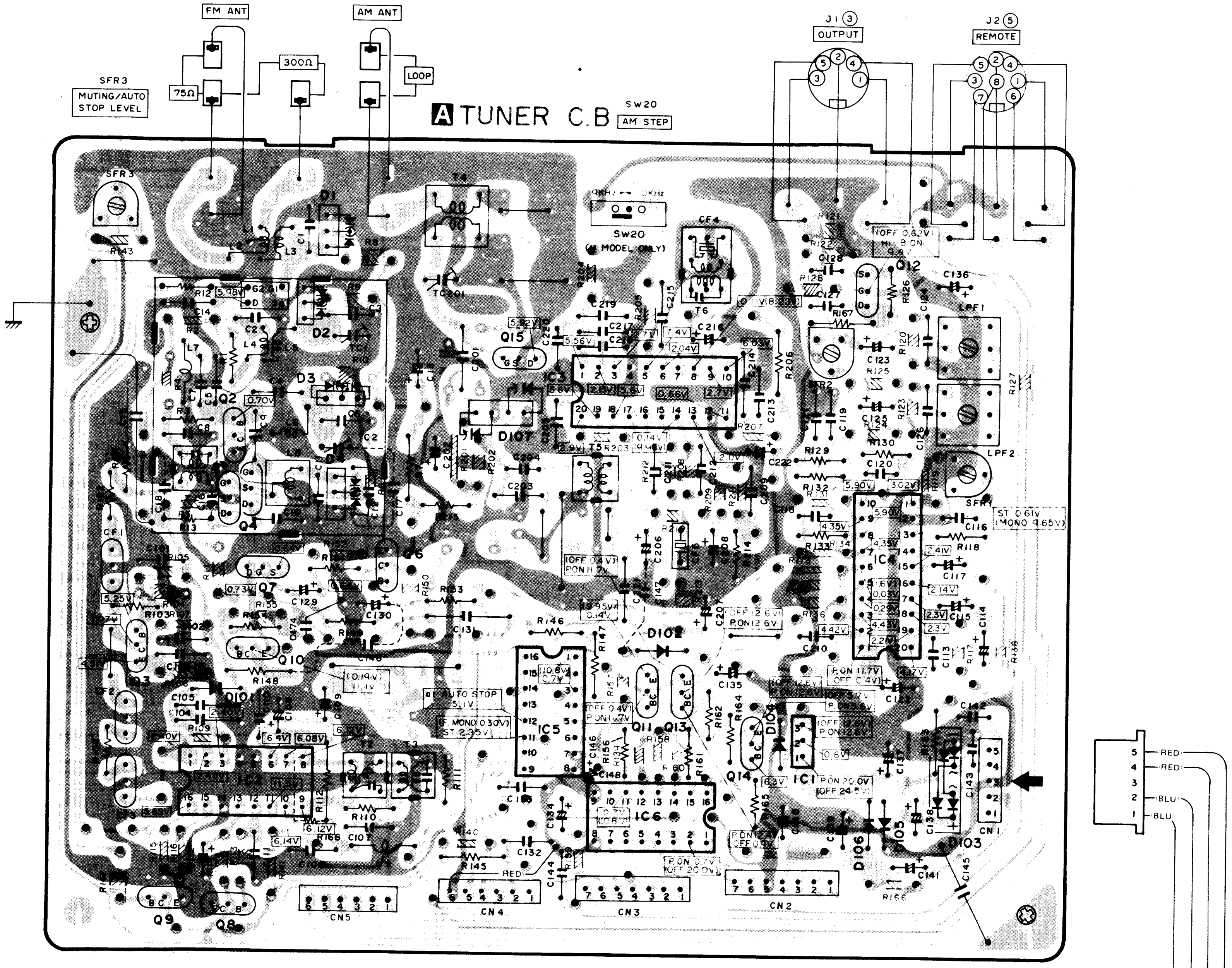
TP1	AM Frequency Range & FM Frequency Range Adjustment Test Point

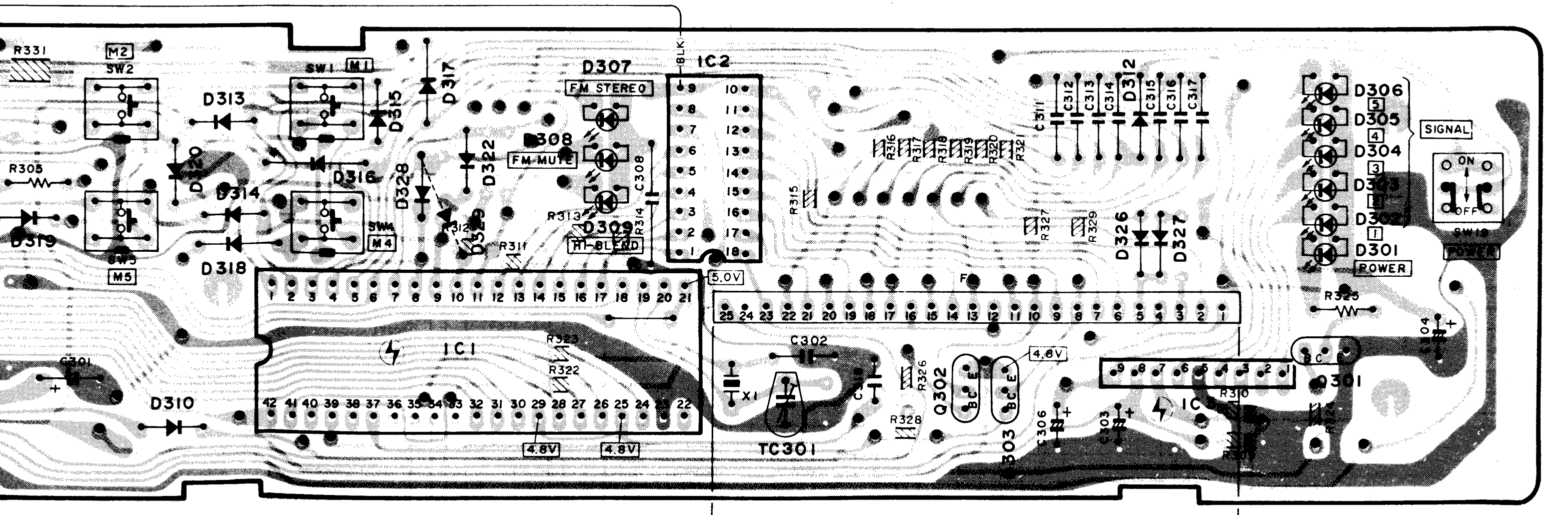
4. FM DC Zero Adjustment

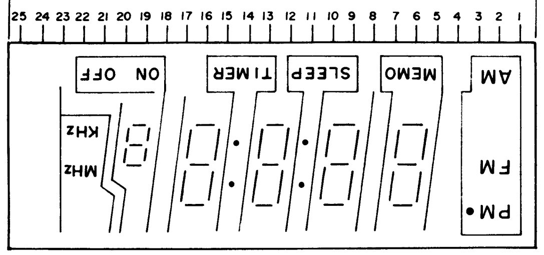
Settings:
- BAND Switch : FM
- FM MUTE Switch : OFF
- Input Signal : 98.0 MHz, 60 dB
- Test Point : TP2
- Adjustment Location : T2

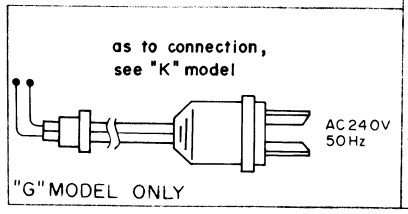
Method
Adjust T2 to obtain a 0 ± 30 mV at TP2.

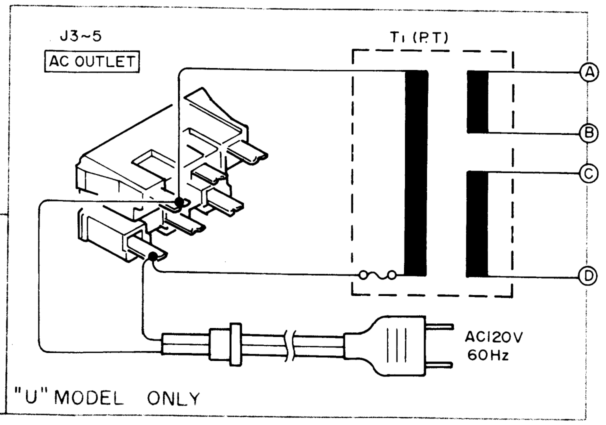
TP2	FM DC Zero, FM Distortion (MONO) & FM Distortion (STEREO) Adjustment Test Point

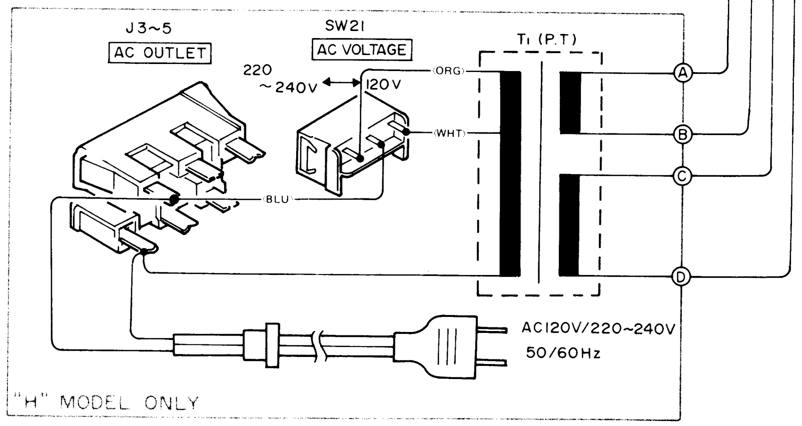

A TUNER C.B
FM ANT
75Ω
300Ω
AM ANT
LOOP
SFR3
MUTING/AUTO STOP LEVEL
SW20
AM STEP
J1 ③
OUTPUT
J2 ⑤
REMOTE
SW20
(M MODEL ONLY)
T4
TC201
CF4
Q15
IC3
D107
T5
Q12
LPF1
LPF2
SFR1
SFR2
IC4
D2
D3
Q2
Q4
Q7
Q10
D101
D102
IC5
Q11
Q13
Q14
IC1
IC2
IC6
D106
D105
D103
Q9
Q8
CN1
CN2
CN3
CN4
CN5
AUTO STOP
F MONO 0.30V
ST 2.55V
ST 0.61V
MONO 0.65V
RED
RED
BLU
BLU
5
4
3
2
1


R331
M2
SW2
D313
SW1
M1
D317
D307
FM STEREO
IC2
BLK
D308
FM MUTE
D309
HI-BLEND
D306
D305
D304
D303
D302
D301
POWER
SIGNAL
SW18
POWER
D314
D316
D318
D319
M5
SW4
M4
D310
C301
IC1
5.0V
4.8V
4.8V
4.6V
X1
TC301
C302
Q302
Q303
Q301
D326
D327
D312

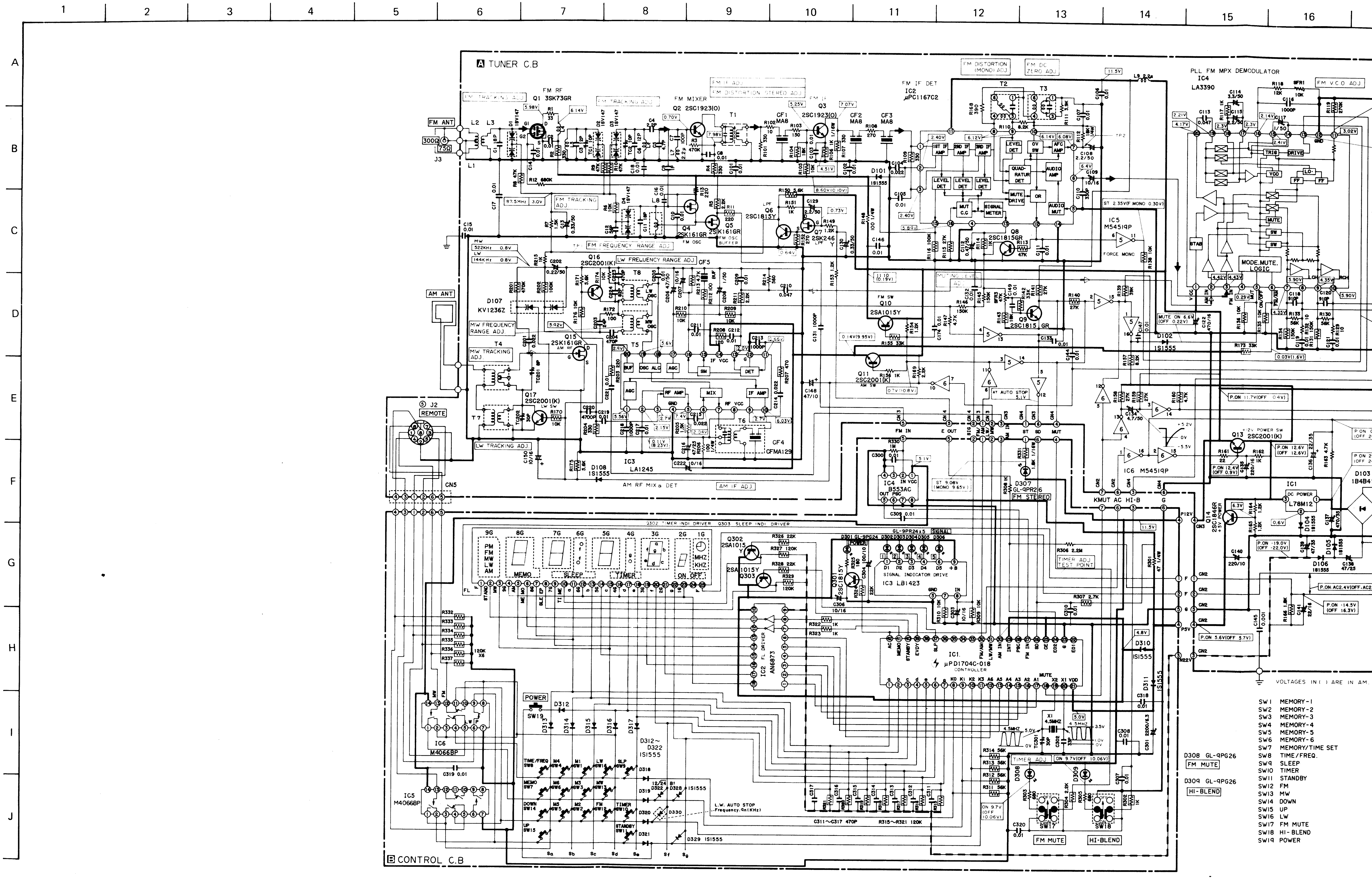

25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
ON OFF
TIMER
SLEEP
MEMO
AM
FM
PM
KHz
MHz


as to connection, see "K" model
AC240V 50Hz
"G" MODEL ONLY


J3~5
AC OUTLET
T1 (P.T)
A
B
C
D
AC120V 60Hz
"U" MODEL ONLY


J3~5
AC OUTLET
SW21
AC VOLTAGE
220 ~240V
120V
ORG
WHT
BLU
T1 (P.T)
A
B
C
D
AC120V/220~240V 50/60Hz
"H" MODEL ONLY

SCHEMATIC DIAGRAM (TX-110 E, K)



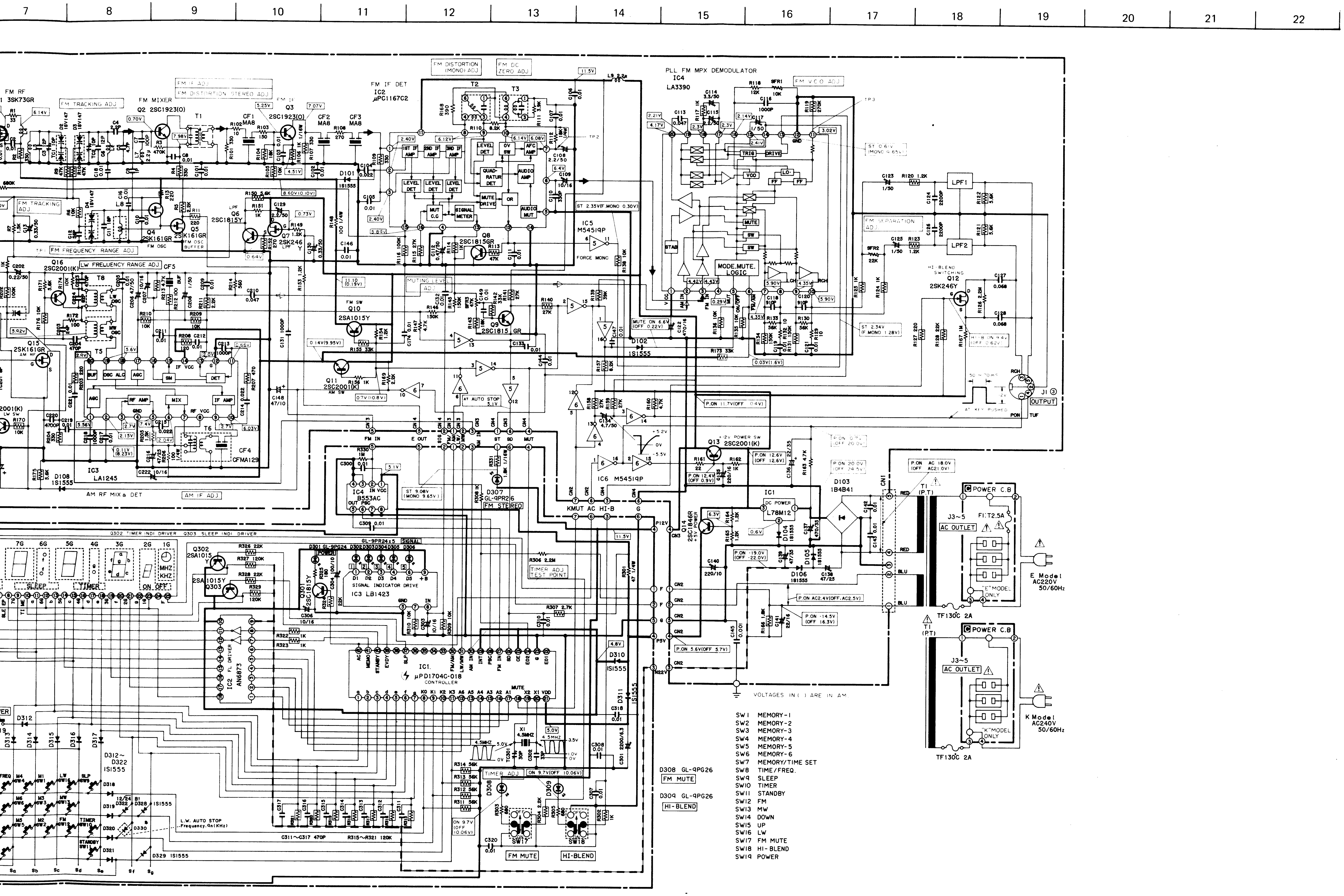
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A TUNER C.B
B CONTROL C.B
FM ANT
300Ω
75Ω
J3
AM ANT
J2
REMOTE
CN5
FM RF
Q1 3SK73GR
FM MIXER
Q2 2SC1923(O)
FM IF
Q3 2SC1923(O)
FM IF DET
IC2
μPC1167C2
FM DISTORTION (MONO) ADJ
FM DC ZERO ADJ
FM IF ADJ
FM DISTORTION STEREO ADJ
FM TRACKING ADJ
FM FREQUENCY RANGE ADJ
Q4 2SK161GR
FM OSC
Q5 2SK161GR
FM OSC BUFFER
Q6 2SC1815Y
LPF
Q7 2SK246
Q8 2SC1815GR
Q9 2SC1815 GR
Q10 2SA1015Y
FM SW
Q11 2SC2001(K)
AM SW
Q13 2SC2001(K)
+12V POWER SW
Q14 2SC1846R
+5V POWER
Q15 2SK161GR
AM RF
Q16 2SC2001(K)
Q17 2SC2001(K)
LW SW
D107
KV1236Z
MW FREQUENCY RANGE ADJ.
MW TRACKING ADJ.
LW FREQUENCY RANGE ADJ
LW TRACKING ADJ.
T4
T5
T6
T7
T8
CF4
CFMA129
CF5
IC3
LA1245
AM RF MIX & DET
AM IF ADJ
PLL FM MPX DEMODULATOR
IC4
LA3390
FM V.C.O ADJ
MODE.MUTE. LOGIC
IC5
M54519P
FORCE MONO
IC6 M54519P
MUTING LEVEL ADJ
AT AUTO STOP
IC4
B553AC
D307
GL-9PR26
FM STEREO
ST 9.08V (MONO 9.65V)
IC1
L78M12
D103
1B4B41
D104
D105
D106
P.ON 12.6V (OFF 12.6V)
P.ON 11.7V(OFF 0.4V)
P.ON 5.6V(OFF 5.7V)
P.ON 19.0V (OFF 22.0V)
P.ON 14.5V (OFF 16.3V)
Q302 2SA1015
Q303 2SA1015Y
Q301 2SC1815Y
D302 TIMER INDI DRIVER
Q303 SLEEP INDI DRIVER
D301 GL-9PG24
D302 D303 D304 D305 D306
GL-9PR24x5
SIGNAL
POWER
SIGNAL INDICATOR DRIVE
IC3 LB1423
TIMER ADJ TEST POINT
IC2 AN6873
FL DRIVER
IC1 μPD1704C-018
CONTROLLER
9G 8G 7G 6G 5G 4G 3G 2G 1G
PM FM MW LW AM
MEMO
SLEEP
TIMER
ON OFF
MHZ KHZ
IC6
M4066BP
IC5
M4066BP
POWER
SW19
D312~D322
1S1555
L.W. AUTO STOP
Frequency 9n(KHz)
D329 1S1555
C311~C317 470P
R315~R321 120K
X1
4.5MHZ
TIMER ADJ
ON 9.7V(OFF 10.06V)
FM MUTE
HI-BLEND
SW17
SW18

VOLTAGES IN ( ) ARE IN AM.

D308 GL-9PG26
FM MUTE

D309 GL-9PG26
HI-BLEND

SW1	MEMORY-1
SW2	MEMORY-2
SW3	MEMORY-3
SW4	MEMORY-4
SW5	MEMORY-5
SW6	MEMORY-6
SW7	MEMORY/TIME SET
SW8	TIME/FREQ.
SW9	SLEEP
SW10	TIMER
SW11	STANDBY
SW12	FM
SW13	MW
SW14	DOWN
SW15	UP
SW16	LW
SW17	FM MUTE
SW18	HI-BLEND
SW19	POWER


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
FM RF 3SK73GR
FM MIXER Q2 2SC1923(O)
FM IF Q3 2SC1923(O)
FM TRACKING ADJ
FM IF ADJ
FM DISTORTION STEREO ADJ
FM DISTORTION (MONO) ADJ
FM DC ZERO ADJ
FM IF DET IC2 μPC1167C2
PLL FM MPX DEMODULATOR IC4 LA3390
FM VCO ADJ
FM SEPARATION ADJ
FM FREQUENCY RANGE ADJ
LW FREQUENCY RANGE ADJ
FM OSC Q4 2SK161GR
FM OSC BUFFER Q5 2SK161GR
Q6 2SC1815Y
Q7 2SK246Y
Q8 2SC1815GR
Q9 2SC1815 GR
Q10 2SA1015Y FM SW
Q11 2SC2001(K) AM SW
Q12 2SK246Y HI-BLEND SWITCHING
Q13 2SC2001(K) +12V POWER SW
Q14 2SC1846R +5V POWER
Q15 2SK161GR AM RF
Q16 2SC2001(K)
IC5 M5451P
IC6 M5451P
IC3 LA1245
AM RF MIX & DET
AM IF ADJ
MUTING LEVEL ADJ
IC4 B553AC
D307 GL-9PR26 FM STEREO
IC1 L78M12 DC POWER
D103 1B4B41
T1 (P.T)
POWER C.B
J3~5 AC OUTLET
F1:T2.5A
E Model AC220V 50/60Hz
"E" MODEL ONLY
K Model AC240V 50/60Hz
"K" MODEL ONLY
TF130C 2A
J1 OUTPUT
LPF1
LPF2
AT KEY PUSHED
Q302 TIMER INDI DRIVER
Q303 SLEEP INDI DRIVER
Q302 2SA1015
Q303 2SA1015Y
Q301 2SC1815Y
IC3 LB1423 SIGNAL INDICATOR DRIVE
IC2 AN6873 FL DRIVER
IC1 μPD1704C-018 CONTROLLER
X1 4.5MHZ
TIMER ADJ
TIMER ADJ TEST POINT
SW17 FM MUTE
SW18 HI-BLEND
L.W. AUTO STOP Frequency.9n(KHz)
C311~C317 470P
R315~R321 120K
D312~D322 1S1555
D329 1S1555

VOLTAGES IN ( ) ARE IN AM.

D308 GL-9PG26
FM MUTE

D309 GL-9PG26
HI-BLEND

SW1	MEMORY-1
SW2	MEMORY-2
SW3	MEMORY-3
SW4	MEMORY-4
SW5	MEMORY-5
SW6	MEMORY-6
SW7	MEMORY/TIME SET
SW8	TIME/FREQ.
SW9	SLEEP
SW10	TIMER
SW11	STANDBY
SW12	FM
SW13	MW
SW14	DOWN
SW15	UP
SW16	LW
SW17	FM MUTE
SW18	HI-BLEND
SW19	POWER